2021 WATER QUALITY MONITORING
PROMPTON RESERVOIR
PROMPTON, PENNSYLVANIA

U.S. Army Corps of Engineers
Philadelphia District
Environmental Resources Branch

December 2021

2021 Water Quality Monitoring
Prompton Reservoir
Prompton, Pennsylvania

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1.0 INTRODUCTION

1.1 PURPOSE OF THE MONITORING PROGRAM

The U.S. Army Corps of Engineers (USACE) manages Prompton Reservoir located in northeastern Pennsylvania within the Delaware River Basin. Prompton Reservoir provides flood control to downstream communities on the Lackawaxen River. Additionally, the reservoir provides important habitat for fish, waterfowl, and other wildlife, and recreational opportunities through fishing and boating. Because of the broad range of uses and demands that Prompton Reservoir serves, the USACE monitors water quality to compare with state water quality standards and to diagnose other problems that commonly effect reservoir health such as nutrient enrichment and toxic loadings. This report summarizes the results of monthly water quality monitoring at Prompton Reservoir for May to August 2021.

1.2 DESCRIPTION OF PROMPTON RESERVOIR

Prompton Reservoir was designed to provide flood control to downstream communities along the Lackawaxen River. A second authorized project purpose is recreation. The reservoir is located about 3 miles northwest of Honesdale, Pennsylvania, and dams a drainage area of 59.7 square miles. The primary surface water input to Prompton Reservoir originates from the West Branch of the Lackawaxen River. The reservoir is approximately 3 miles long with a maximum of 30-35 feet deep at the face of the dam near the township of Prompton, Pennsylvania.

1.3 ELEMENTS OF THE STUDY

The USACE, Philadelphia District, has been monitoring water quality of Prompton Reservoir since 1975. Over this time, the yearly monitoring designs have evolved to address new concerns such as health of public drinking water and contamination of sediments. The 2021 monitoring program follows that in most recent years and includes the following major elements:

- Monthly water quality monitoring of reservoir and tributaries - to evaluate compliance with Pennsylvania state water quality standards and potential public health concerns; and

- Monthly profile samples for temperature, dissolved oxygen, chlorophyll, pH, turbidity, and conductivity at all stations in the reservoir and watershed.

2.0 METHODS

2.1 PHYSICAL STRATIFICATION MONITORING

Physical stratification monitoring of the water column at Prompton Reservoir was conducted five times between 11 May and 17 August 2021 (Table 2-1). Physical stratification parameters included temperature, dissolved oxygen (DO), pH, turbidity, and conductivity. Monitoring was conducted at four fixed stations located throughout the Prompton Reservoir watershed (Fig. 2-1). Surface water quality was monitored upstream of the lake at station PR-1S and downstream of the dam at station PR-4S (Fig. 2-1). Stations within the reservoir, PR-2 and PR-3, were monitored at 5-foot intervals from the surface to the bottom. All water quality parameters were measured with a calibrated YSI 6600 V2-4 water quality sonde.

The results of stratification monitoring were compared to water quality standards authorized by the Pennsylvania Department of Environmental Protection (PADEP: Chapter 93 Water Quality Standards, 2000), where applicable. The water quality standard for DO is a minimum concentration of 5 mg/L and that for pH is an acceptable range from 6 to 9. All of the water quality data collected during physical stratification monitoring is summarized in Appendix A.

2.2 WATER COLUMN CHEMISTRY MONITORING

Water column chemistry monitoring of the water column at Prompton Reservoir was conducted five times between 11 May and 17 August 2021 (Table 2-1). Water samples were collected at four fixed stations within the reservoir watershed (Fig. 2-1). Surface water samples were collected at stations upstream (PR-1S) and downstream (PR-4S) of the reservoir. Surface, middle, and bottom water samples were collected at main reservoir body stations (PR-2 and PR-3). Surface water samples were collected by opening the sample containers approximately 1 foot below the water's surface. Middle and bottom water samples were collected with a Van Dorn design horizontal water sampler.

Water samples from all depths were analyzed for ammonia (NH3), nitrite (NO2), nitrate (NO3), total kjeldahl nitrogen (TKN), soluble dissolved phosphorus (DP), total phosphorus (TP), total dissolved solids (TDS), total suspended solids (TSS), biochemical oxygen demand (BOD), alkalinity (ALK) and total organic carbon (TOC). Table 2-2 summarizes the water quality parameters, laboratory methods and reporting detection limits, state water quality standards, and allowable maximum hold times for each during the 2021 monitoring period. Laboratory reporting and custody sheets are provided in Appendix B.

Table 2-1. Prompton Reservoir water quality monitoring schedule for 2021

Date of Sample Collection	Physical Stratification Monitoring (All Stations)	Water Column Chemistry Monitoring (All Stations)	Trophic State Determination (PR-3)	Coliform Bacteria Monitoring (All Surface Stations)
11 May	X	X	X	X
08 June	X	X	X	X
29 June	X	X	X	X
20 July	X	X	X	X
17 August	X	X	X	X

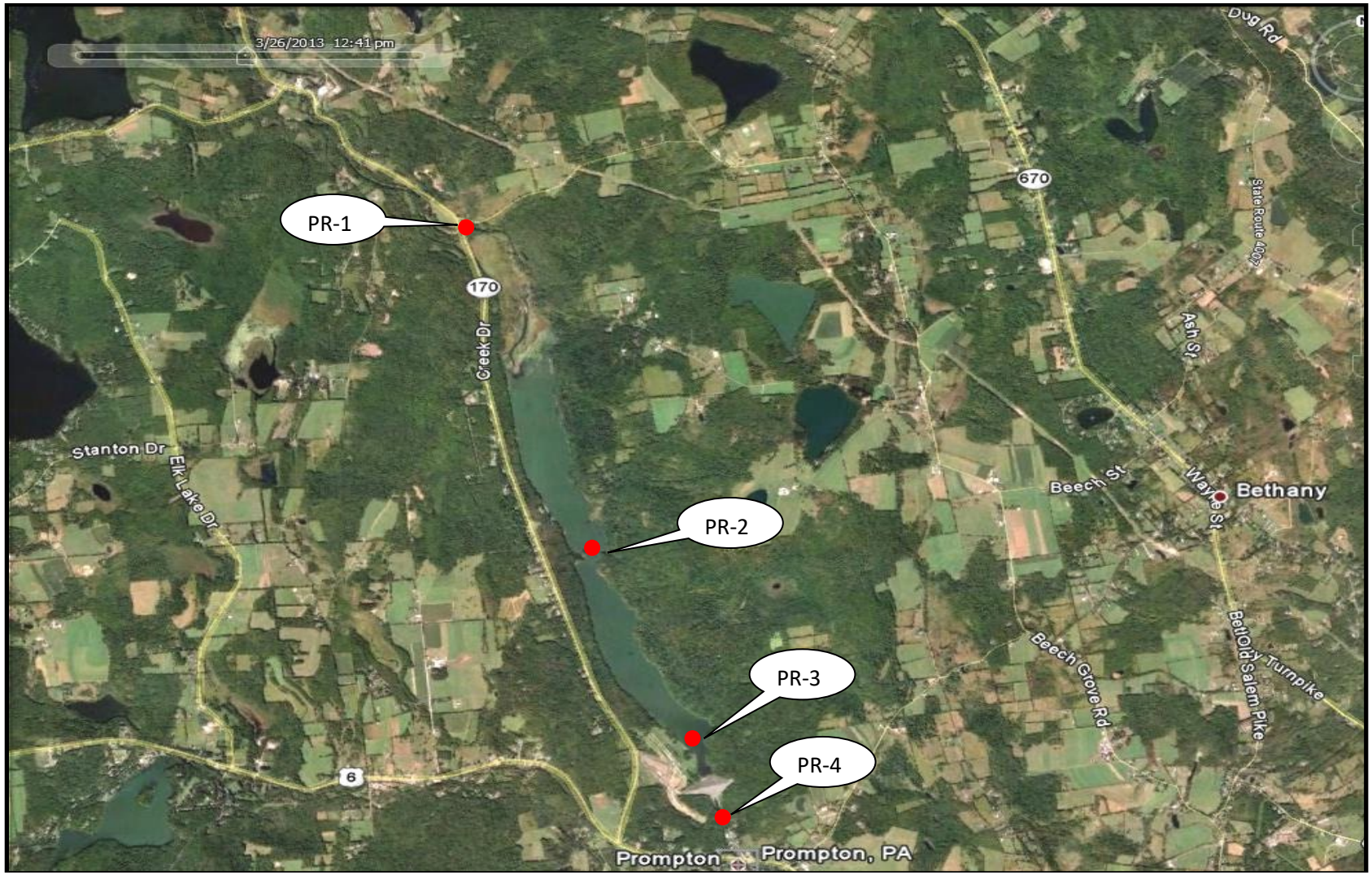

Figure 2-1. Location map for Prompton Reservoir and water quality monitoring stations in 2021.

Table 2-2. Water quality test methods, detection limits, state regulatory criteria, and sample holding times for water quality parameters monitored at Prompton Reservoir in 2021.

Parameter	(2) Method	Laboratory Limit of Reporting	PADEP Surface Water Quality Criteria	Allowable Hold Times (Days)
Total Alkalinity	SM20 2320 B	2.0 mg/L	Min. 20 mg/L $CaCO_3$	14
Biochemical Oxygen Demand (BOD)	SM5210 B	2.0 mg/L	None	2
Total Phosphorus	SM4500-P F	0.01 mg/L	None	28
Diss./Ortho-Phosphate	NA	NA	None	28
Soluble Phosphorus	SM4500-P F	0.01 mg/L	None	28
Total Organic Carbon (TOC)	SM5310 C	0.5 mg/L	None	28
Total Inorganic Carbon (TIC) *	NA	NA	None	28
Total Carbon (TOC + TIC) *	NA	NA	None	28
(1) Chlorophyll *a*	YSI Probe	----	None	In Situ
Total Kjeldahl Nitrogen	EPA 351.2	0.50 mg/L	None	28
Ammonia	ASTM D6919-03	0.10 mg/L	Temp. and pH dependent	28
Nitrate	EPA 300.0 Rev 2.1	1.0 mg/L	Maximum 10 mg/L (nitrate + nitrite)	28
Nitrite	EPA 300.0 Rev 2.1	0.10 mg/L		28
Total Dissolved Solids	SM2540 C	5.0 mg/L	Maximum 750 mg/L	7
Total Suspended Solids	SM2540 D	1.0 mg/L	None	7

(1) Chlorophyll *a* samples were recorded using a YSI 6600 with a chlorophyll sensor.
(2) Laboratory Methods Reference:
EPA- "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.
SM- "Standard Methods for the Examination of Water and Wastewater", 22nd Edition, 2012.
SW846- "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods", 3rd. Edition, November 1986 and updates.
* Total Inorganic Carbon and Total Carbon were not sampled for in 2021

2.3 TROPHIC STATE DETERMINATION

The trophic state of Prompton Reservoir was determined by methods outlined by Carlson (1977) and EPA (1983). In general, these methods calculate trophic state indices (TSIs) independently for measures of total phosphorus, chlorophyll *a*, and secchi disk depth. Surface water measures of total phosphorus and chlorophyll *a* from chemistry monitoring were used independently in the calculations of monthly TSIs (Table-2-1). Secchi disk depth was measured monthly at station PR-3 and used for the TSI calculation. Trophic state determinations were calculated only for Station PR-3 within the reservoir.

2.4 RESERVOIR BACTERIA MONITORING

Monitoring for coliform bacteria contaminants was conducted at Prompton Reservoir five times between 11 May and 17 August 2021. Surface water samples were collected in the same manner as for chemical parameter samples and analyzed for total coliform and escherichia coliform contamination. Table 2-3 presents the test methods, detection limits, EPA/PADEP standards, and sample holding times for the bacteria parameters monitored at Prompton Reservoir in 2021. The bacteria analytical method was based on a membrane filtration technique. All the samples were analyzed within their maximum allowable hold times unless otherwise noted in laboratory reporting sheets (Appendix B).

Monthly coliform bacteria counts were compared to the EPA/PADEP single sample and primary contact water quality standard for bacteria. This recreational sample recommended standard is defined as a maximum geometric mean of 126 colonies/100-ml based on five samples collected on different days within a 30-day period and a single sample standard of 235 colonies/100-ml. Application of this standard is not necessary at Prompton Reservoir because swimming and other human/water contact recreation is prohibited in the reservoir. However, it is used in evaluating the bacteria conditions found within the reservoir and associated with overall water quality conditions.

Table 2-3. Water quality test methods, detection limits, PADEP standards, and sample holding times for bacteria parameters monitored at Prompton Reservoir in 2021.

Parameter	Total Coliform	Escherichia Coliform
Test method	SM 9223 B	SM 9223 B
Limit of Quantification	1 mpn/100-mls	1 mpn/100-mls
EPA/PADEP standard	None	Geometric mean < 126 mpn/100-mls or a single sample reading of < 235 mpn/100-mls
Max. allowable holding time	30 hours	30 hours
Achieved holding time	< 30 hours	< 30 hours

3.0 RESULTS AND DISCUSSION

3.1 STRATIFICATION MONITORING

The following sections summarize the results of water quality monitoring for physical and chemical parameters: temperature, dissolved oxygen (DO), and pH. For each parameter, seasonal and spatial patterns of surface water quality measured throughout the watershed, and seasonal and depth related patterns of the lake water column based on measures from the deepest portion of the reservoir (station PR-3) are described. The discussion on stratification is focused on station PR-3 as water quality problems related to depth are generally most severe in deeper water habitats, thus the evaluation will be a conservative one. All the physical/chemical parameters were measured with a calibrated YSI 6600 V2-4 water quality monitoring sonde and are presented in Appendix A.

3.1.1 Temperature

Temperature is the primary influencing factor on water density, affects the solubility of many chemicals' compounds, and can therefore influence the effect of pollutants on aquatic life. Increased temperatures elevate the metabolic oxygen demand, in conjunction with reduced oxygen solubility, and can impact many species. Vertical stratification patterns naturally occurring in lakes affect the distribution of dissolved and suspended compounds.

Temperature of the tributary and downstream surface waters of Prompton Reservoir were influenced by seasonal weather patterns and in lake thermal warming patterns during 2021. Maximum temperatures were recorded in tributary surface waters during the 29 June sampling event and in the downstream release waters during the 20 July sampling event (Fig. 3-1). Upstream tributary temperatures at station PR-1S maintained a seasonal average temperature of 16.88°C and ranged from 7.99°C in May to 21.11°C in late June. Downstream temperatures at station PR-4S averaged 17.99°C and ranged from 11.95°C in May to 22.32°C in July. The warmer downstream release temperatures result from thermally warmed waters being released from the reservoir during various periods of the year.

The surface water temperatures (0-5 feet) within the reservoir were generally greater than the upstream tributary station PR-1S because of in-lake thermal warming. Surface temperatures for the sampling period at reservoir body station PR-3, near the outlet works of the dam, averaged 21.91°C and ranged from 12.30°C in May to 24.58°C in August. Prompton Reservoir experienced weak stratification patterns with respect to temperature in 2021 (Fig. 3-2).

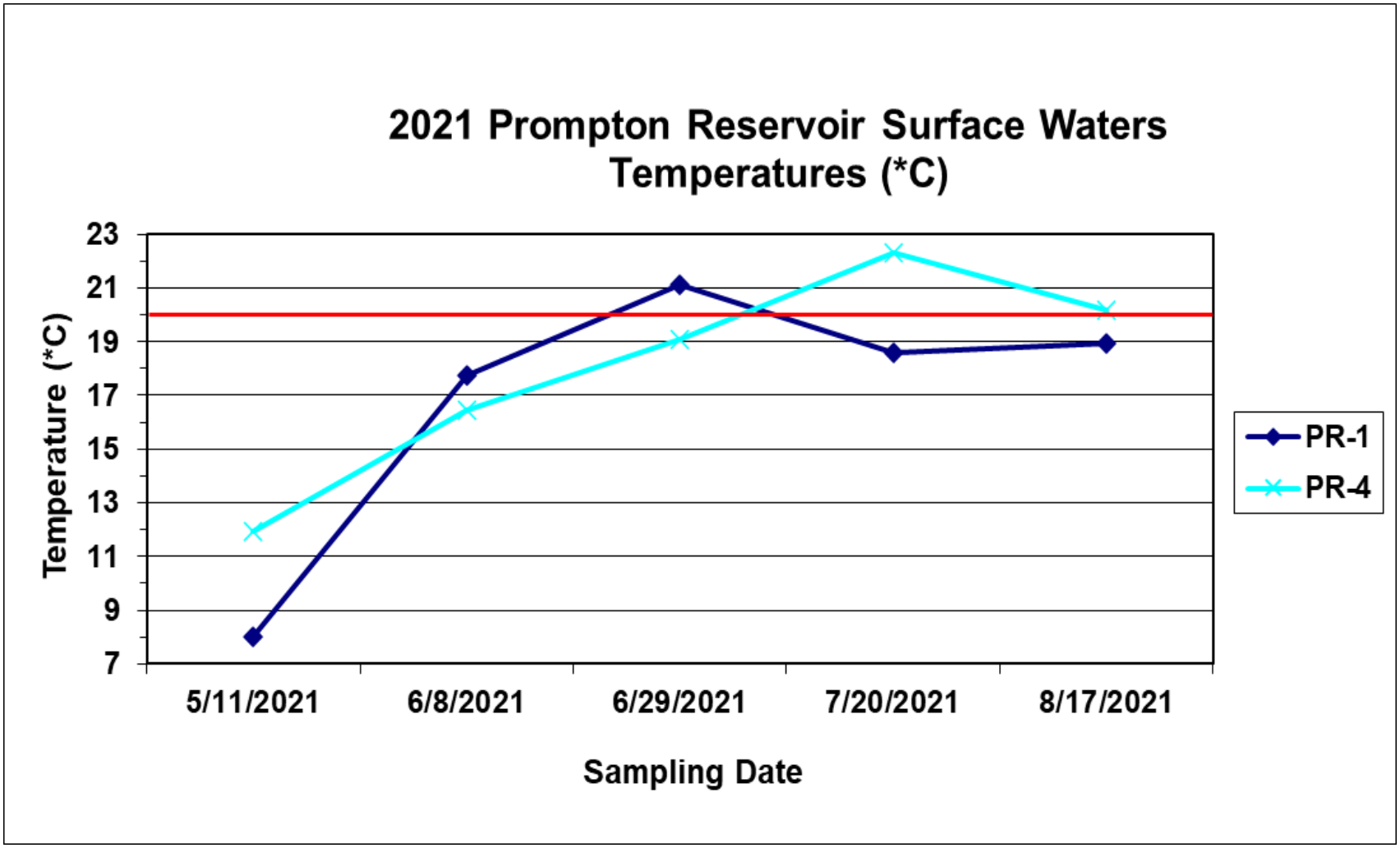

Figure 3-1. Temperature in tributary and outflow surface waters of Prompton Reservoir during 2021. See Appendix A for a summary of plotted values. The cold-water species preference temperature of 20°C is shown as a red line comparison.

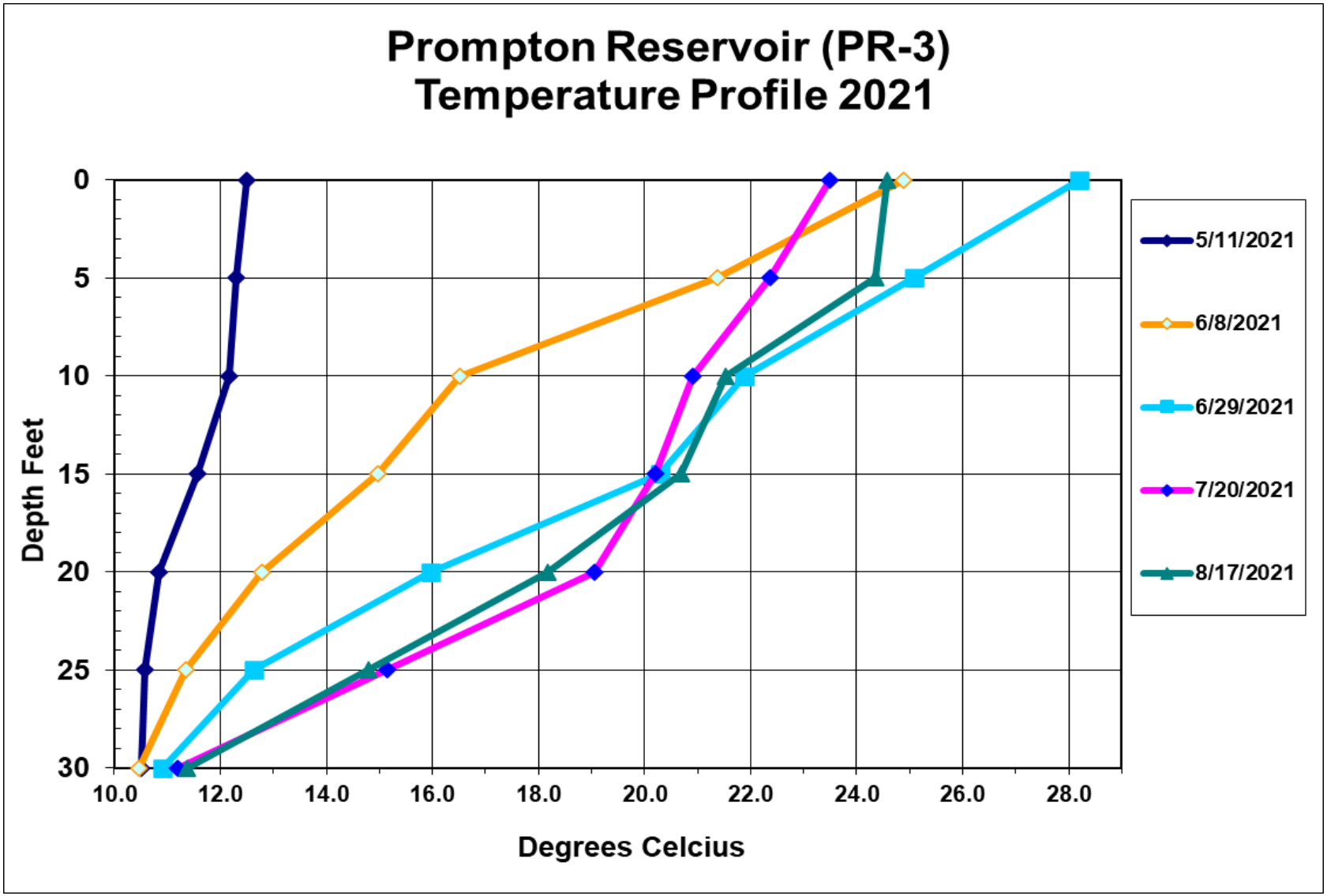

Figure 3-2. Temperature stratification of Prompton Reservoir during 2021 from water quality measured at station PR-3. See Appendix A for a summary of plotted values.

3.1.2 Dissolved Oxygen

Dissolved oxygen (DO) is the measure of the amount of DO in water. Typically, DO concentrations in surface waters are less than 10 mg/L. Dissolved Oxygen concentrations are subject to diurnal and seasonal fluctuations that can be influenced, in part, by temperature, river discharge, and photosynthetic activity. Dissolved Oxygen is essential to the respiratory metabolism of most aquatic organisms. It affects the availability and solubility of nutrients and subsequently the productivity of aquatic ecosystems. Low levels of oxygen can facilitate the release of nutrients from bottom sediments.

Dissolved oxygen (DO) in the inflow and outflow surface waters of Prompton Reservoir generally followed a similar seasonal pattern throughout the 2021 sampling season (Fig. 3-3). Waters released from the reservoir and measured at station PR-4S had lower dissolved oxygen levels then reservoir inflows at tributary station PR-1S because of the release of low oxygen waters downstream from the reservoir. The greatest difference of DO readings was recorded on 17 August when inflow (PR-1S) DO was 8.20 mg/L and outflow (PR-4S) DO was 6.84 mg/L. Dissolved oxygen concentrations upstream (PR-1S) ranged from 11.47 mg/L in May to 8.20 mg/L in August with an average seasonal reading of 9.21 mg/L. Dissolved oxygen concentrations downstream (PR-4S) ranged from 10.58 mg/L in May to 6.84 mg/L in August with a seasonal average of 8.24 mg/L.

The stratification of Prompton Reservoir influenced the distribution of DO in the water column during 2021 (Fig. 3-4). For most of the sampling season, the lower water column from approximately 10-15 feet of depth from the water surface to the lake bottom was severely depleted of oxygen with concentrations less than 5 mg/L. The release of waters downstream containing lower DO concentrations had some lowering effect on DO levels recorded at downstream station PR-4S. The re-aeration of the released waters through the dam conduit system maintained DO concentrations above state criteria downstream. Dissolved oxygen concentrations in the water column of Prompton Reservoir were in compliance with PADEP lake water quality standards. The Pennsylvania water quality standard for DO is a minimum concentration of 5 mg/L in the epilimnion of stratified lakes.

The health of aquatic ecosystems can be impaired by low DO concentrations in the water column. Hypoxia, or conditions of DO concentrations less than 2 mg/L, is generally accepted as the threshold at which the most severe effects on biota occur. In 2021, the lower water column of Prompton was most affected by hypoxia. Hypoxic water was encountered in all months sampled, except for May and commonly occupied the lower half of the water column from a 15 to 20-foot depth and continuing to the lake bottom. Hypoxia in the lower water column is a symptom of eutrophication. Nutrients in the water column feed explosive algal growth at the surface photic zone. Dead and decaying algae sink to lower levels of the water column and during the process of decay; oxygen is removed from the water.

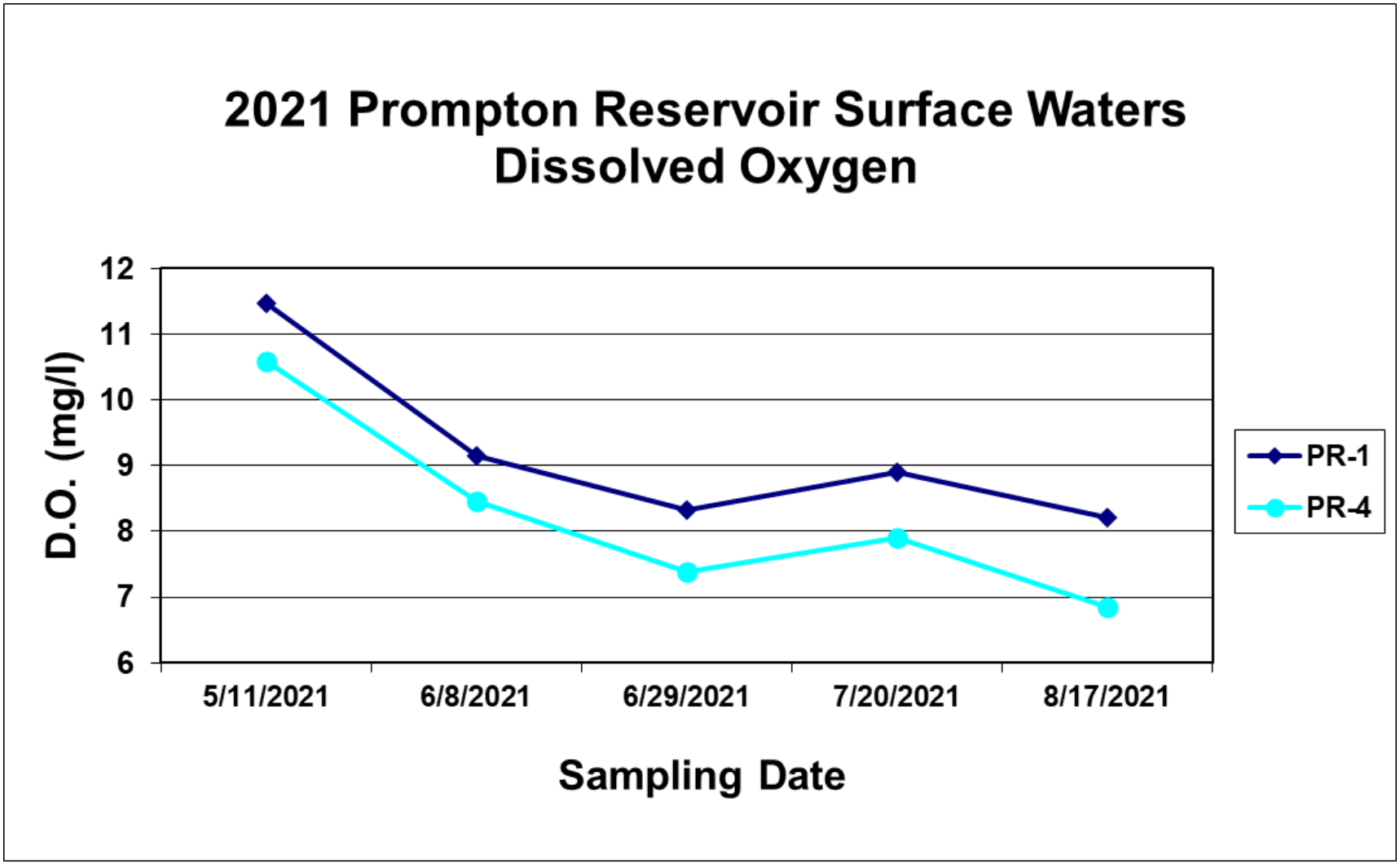

Figure 3-3. Dissolved oxygen in tributary surface waters of Prompton Reservoir during 2021. PADEP minimum DO standard is 5 mg/L. See Appendix A for a summary of plotted values.

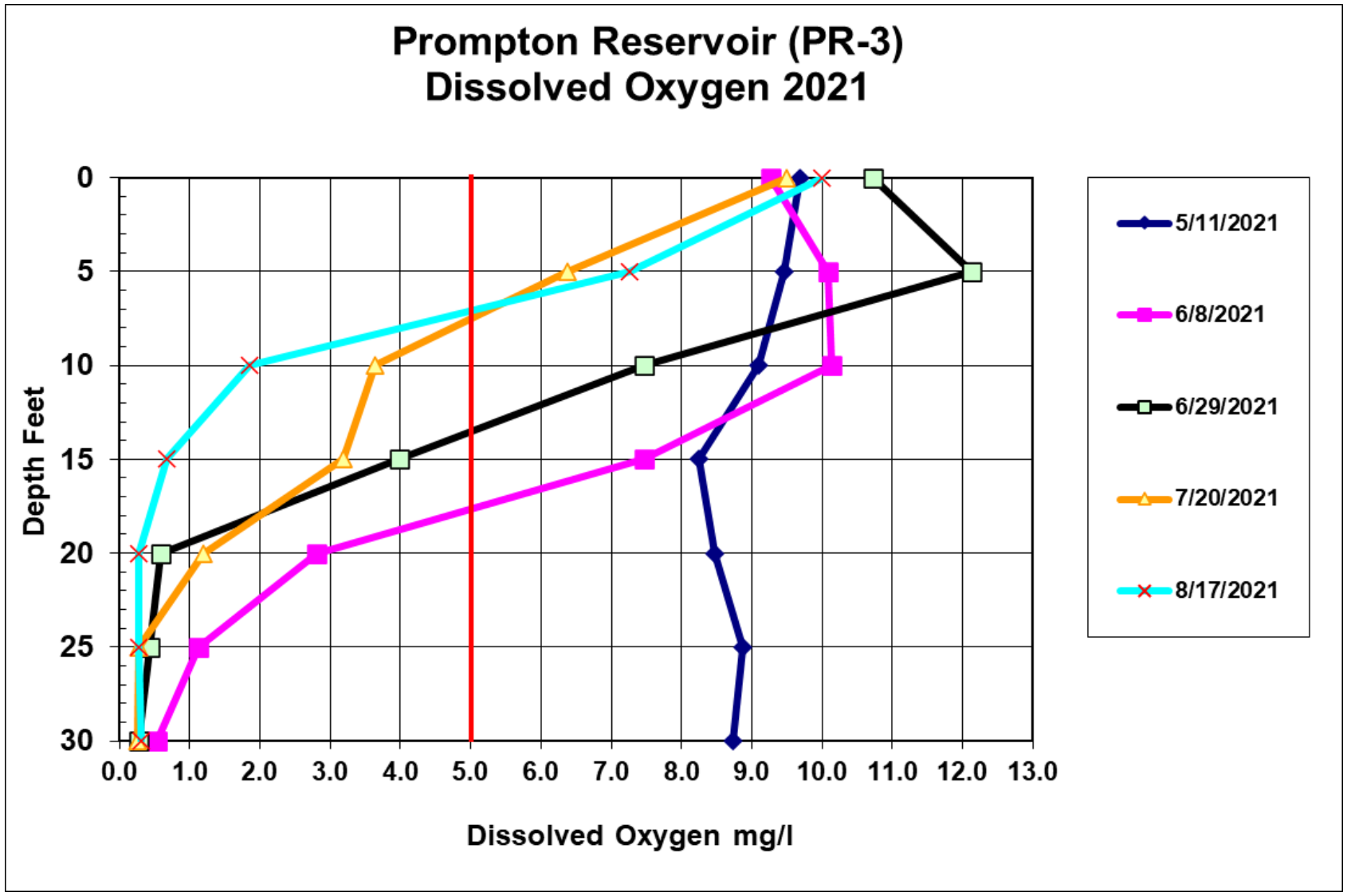

Figure 3-4. Dissolved oxygen stratification of Prompton Reservoir during 2021 from water quality measured at station PR-3. The PADEP minimum DO standard is 5 mg/L. See Appendix A for a summary of plotted value

3.1.3 pH

PH is the measure of the hydrogen –ion concentration in the water. A pH below 7 is considered acidic and a pH above 7 is basic. The pH scale is 0-14 with the lower numbers being more acidic and the higher numbers being more basic. High pH values tend to facilitate solubilization of ammonia, salts, and heavy metals. Low pH levels tend to increase carbonic acid and carbon dioxide concentrations. Lethal effects of pH on aquatic life typically occur below pH 4.5 and above pH 9.5.

Measures of pH in the surface waters at tributary station PR-1S and downstream release waters at station PR-4S ranged from 6.69 in August to 7.59 in late June (Fig. 3-5). The seasonal pH average for PR-1S and PR-4S were 7.23 and 7.14, respectively.

The water column of Prompton Reservoir maintained a relatively stable pH through most of the sampling season in 2021 with higher lake surface water pH seen in most months sampled (Fig. 3-6). In general, the development of stratification and increase in surface temperatures is reflected with an increase in pH at the surface while the lower water column remained relatively constant. This was recorded in most months sampled. The elevated pH in surface waters of the reservoir during summer periods can be attributed to algal productivity at the surface. Algal blooms were observed at the lake in 2021. As a function of increased productivity, algae remove CO_2 from the water column. Since dissolved CO_2 is slightly acidic, its reduction in the water column is manifested by an increase in pH near the surface waters.

The surface waters of the Prompton Reservoir lake stations were not in compliance with PADEP standards for pH during late June 2021. The water quality standard for pH is a range of acceptability from 6.0 to 9.0 pH units. Near surface water readings on 29 June exceeded the pH 9.0 criteria.

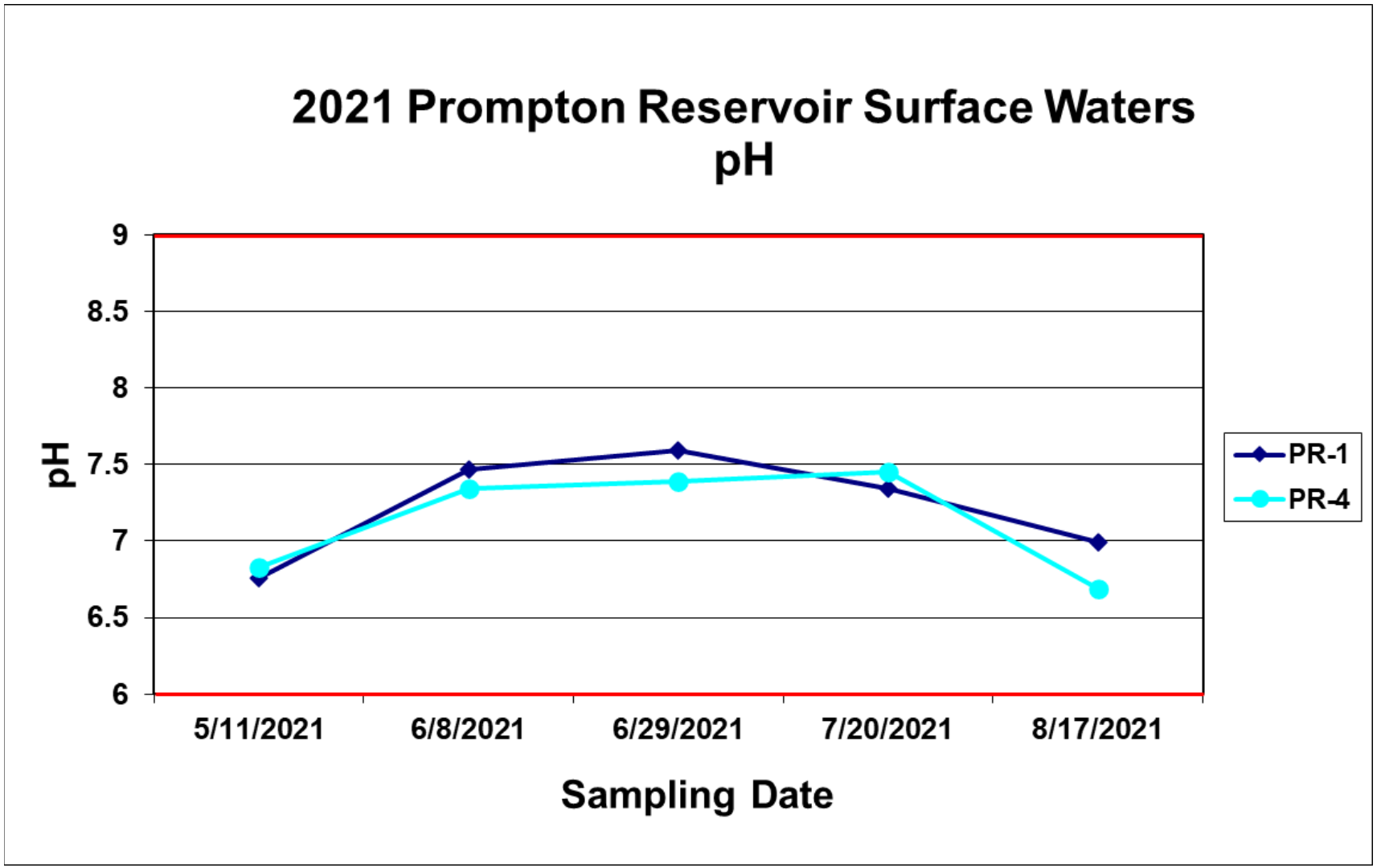

Figure 3-5. Measures of pH in tributary and outflow surface waters of Prompton Reservoir during 2021. PADEP minimum and maximum pH standards are 6 and 9, respectively. See Appendix A for a summary of plotted values.

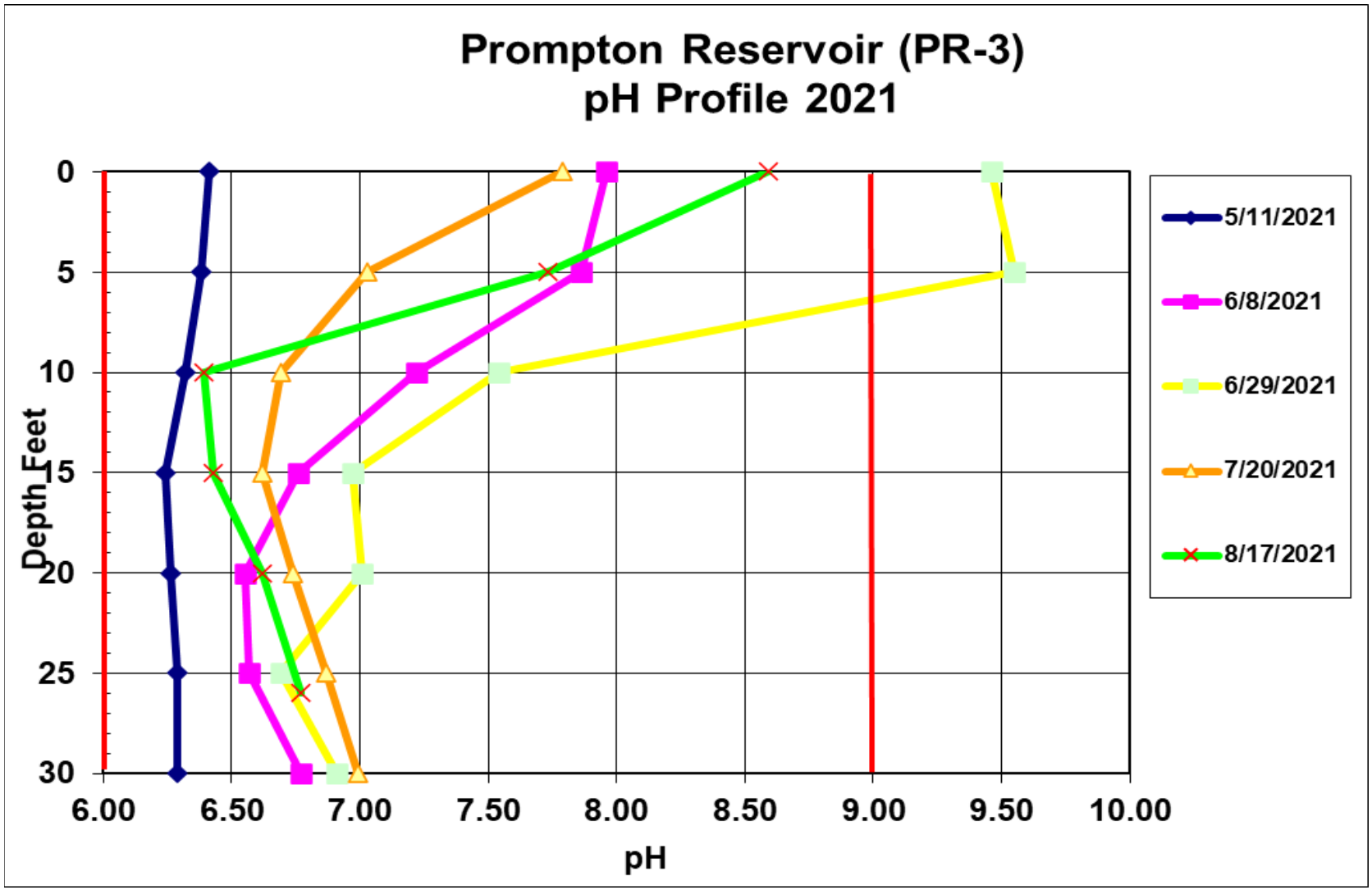

Figure 3-6. Stratification of pH at Prompton Reservoir during 2021, from water quality measured at station PR-3. PADEP minimum and maximum pH standards are 6 and 9, respectively. See Appendix A for a summary of plotted values.

3.2 WATER COLUMN CHEMISTRY MONITORING

The following sections describe temporal, spatial, and depth related patterns for water quality parameters measured at Prompton Reservoir during 2021 (Table 3-2).

3.2.1 Ammonia

Total Ammonia (NH3) is a measure of the most reduced inorganic form of nitrogen in water and includes dissolved ammonia and the ammonium ion. Ammonia is a small component of the nitrogen cycle but as an essential plant nutrient, it contributes to the trophic status of a water body. Excess ammonia contributes to eutrophication of water bodies. This can result in excessive algal growths and impacts on recreation and drinking water supplies. In high concentrations, ammonia is toxic to aquatic life.

EPA guidance for ambient water quality criteria for Ammonia in freshwater are dependent on temperature and pH (EPA, 2013). Table 3.1 shows the acute and chronic criteria that are expected to protect freshwater aquatic life. The EPA (2013) also provides tables with the temperature and pH-dependent values of the acute and chronic criterion magnitudes. These tables provide an expected ammonia criterion over a wide range of pH and temperature values and can be utilized to evaluate field collected samples.

Table 3.1 Environmental Protection Agency Ammonia Freshwater Criteria 2013

2013 Final Aquatic Life Criteria for Ammonia (Magnitude, Frequency, and Duration) (mg TAN/L) pH 7.0, T=20°C	
Acute (1-hour average)	17
Chronic (30-day rolling average)	1.9*

*Not to exceed 2.5 times the CCC as a 4-day average within the 30-days, i.e. 4.8 mg TAN/L at pH 7 and 20°C, more than once in three years on average.
Criteria frequency: Not to be exceeded more than once in three years on average.

Ammonia levels in the watershed and lake of Prompton Reservoir were low during 2021 (Table 3-2). Concentrations measured at all surface and middle water column stations shown 5 detectable readings with 35 readings less than the laboratory reporting limit (0.05 mg/L). The highest concentration of 0.21 mg/L was measured on 29 June in the bottom waters of the deepest portion of the reservoir located at station PR-3D. Increased ammonia concentrations are characteristic of low dissolved oxygen environments in stratified lakes resulting from the decomposition of organic materials. Prompton Reservoir experienced these conditions in 2021 resulting in higher levels of ammonia in the deeper areas of the reservoir. In 2021, Prompton Reservoir remained below the EPA water quality criteria for ammonia, which is dependent on temperature and pH (Table 3-1).

Table 3-2. Summary of surface, middle, and bottom water quality monitoring data for Prompton Reservoir in 2021

Station	Date	ALK	BOD5	DISS-P	NH3	NO2	NO3	NO3-NO2	TDS	TKN	TOC	TP	TSS
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
PR-1S	5/11/2021	16	<2.0	<0.05	<0.05	<0.01	0.26	0.27	26	<0.48	4.0	<0.01	1
	6/8/2021	25	<2.0	0.02	<0.05	<0.01	0.43	0.44	62	<0.48	3.2	0.01	4
	6/29/2021	28	<2.0	0.01	<0.05	<0.01	0.45	0.46	64	<0.48	2.7	0.03	1
	7/20/2021	23	<2.0	0.06	<0.05	<0.01	0.33	0.34	78	<0.43	5.5	0.03	2
	8/17/2021	30	<2.0	0.03	<0.05	<0.01	0.30	0.31	52	<0.43	2.3	0.02	2
	Mean	24	2.0	0.03	0.05	0.01	0.35	0.36	56	0.46	3.5	0.02	2
	Stdev	5.4	0.0	0.02	0	0	0.08	0.08	19	0.03	1.3	0.01	1
	Max	30	2.0	0.06	0.05	0.01	0.45	0.46	78	0.48	5.5	0.03	4
	Min	16	2	0.01	0.05	0.01	0.26	0.27	26	0.43	2.3	0.01	1
	No. of Det.	5	0	4	0	0	5	5	5	0	5	4	5
PR-2S	5/11/2021	17	<2.0	<0.05	<0.05	<0.01	0.21	0.22	29	<0.48	4.2	<0.01	<1
	6/8/2021	22	<2.0	<0.01	<0.05	<0.01	<0.10	<0.11	43	<0.48	3.8	<0.01	6
	6/29/2021	27	5.1	0.01	<0.05	<0.01	<0.10	<0.11	55	<0.48	4.0	0.01	8
	7/20/2021	20	2.5	0.03	<0.05	<0.01	0.17	0.18	84	0.50	6.5	0.02	2
	8/17/2021	24	7.4	0.04	<0.05	<0.01	<0.10	<0.11	32	0.81	6.4	0.02	11
	Mean	22	3.8	0.03	0.05	0.01	0.14	0.15	49	0.55	5.0	0.01	6
	Stdev	4	2.4	0.02	0	0	0.05	0.05	22	0.15	1.3	0.01	4
	Max	27	7.4	0.05	0.05	0.01	0.21	0.22	84	0.81	6.5	0.02	11
	Min	17	2.0	0.01	0.05	0.01	0.1	0.11	29	0.48	3.8	0.01	1
	No. of Det.	5	3	3	0	0	2	2	5	2	5	3	4

Table 3-2 continued. Summary of surface, middle, and bottom water quality monitoring data for Prompton Reservoir in 2021

Station	Date	ALK mg/L	BOD5 mg/L	DISS-P mg/L	NH3 mg/L	NO2 mg/L	NO3 mg/L	PO4 mg/L	TDS mg/L	TKN mg/L	TOC mg/L	TP mg/L	TSS mg/L
PR-2M	5/11/2021	16	<2.0	<0.05	<0.05	<0.01	0.21	0.22	47	<0.48	4.3	<0.01	2
	6/8/2021	20	<2.0	<0.01	<0.05	<0.01	<0.10	<0.11	86	<0.48	3.7	<0.01	5
	6/29/2021	24	3.3	0.01	<0.05	<0.01	<0.10	<0.11	59	<0.48	3.8	0.01	3
	7/20/2021	20	<2.0	0.03	<0.05	<0.01	0.25	0.26	52	<0.43	6.1	0.03	1
	8/17/2021	24	5.7	0.01	<0.05	<0.01	<0.10	<0.11	64	0.74	5.4	0.02	9
	Mean	21	3.0	0.02	0.05	0.01	0.15	0.16	62	0.52	4.7	0.02	4
	Stdev	3	1.6	0.018	0	0	0.07	0.07	15	0.12	1.1	0.01	3
	Max	24	5.7	0.05	0.05	0.01	0.25	0.26	86	0.74	6.1	0.03	9
	Min	16	2.0	0.01	0.05	0.01	0.1	0.11	47	0.43	3.7	0.01	1
	No. of Det.	5	2	3	0	0	2	2	5	1	5	3	5
PR-2D	5/11/2021	16	<2.0	<0.05	<0.05	<0.01	0.22	0.23	28	<0.48	4.5	<0.01	1
	6/8/2021	21	<2.0	<0.01	<0.05	<0.01	0.15	0.16	90	<0.48	3.9	<0.01	3
	6/29/2021	27	3.5	<0.01	<0.05	<0.01	0.14	0.15	75	<0.48	3.8	0.04	34
	7/20/2021	21	<2.0	0.04	<0.05	<0.01	0.26	0.27	62	<0.43	6.1	0.03	<1
	8/17/2021	27	<2.0	0.02	<0.05	<0.01	0.17	0.18	48	<0.43	5.3	0.02	3
	Mean	22	2.3	0.03	0.05	0.01	0.19	0.20	61	0.46	4.7	0.02	8
	Stdev	5	1	0.02	0.00	0	0.05	0.05	24	0.03	1.0	0.01	14
	Max	27	3.5	0.05	0.05	0.01	0.26	0.27	90	0.48	6.1	0.04	34
	Min	16	2	0.01	0.05	0.01	0.14	0.15	28	0.43	3.8	0.01	1
	No. of Det.	5	1	2	0	0	5	5	5	0	5	3	4

Table 3-2 continued. Summary of surface, middle, and bottom water quality monitoring data for Prompton Reservoir in 2021

Station	Date	ALK mg/L	BOD5 mg/L	DISS-P mg/L	NH3 mg/L	NO2 mg/L	NO3 mg/L	PO4 mg/L	TDS mg/L	TKN mg/L	TOC mg/L	TP mg/L	TSS mg/L
PR-3S	5/11/2021	16	<2.0	<0.05	<0.05	<0.01	0.22	0.23	47	<0.48	4.2	0.08	1
	6/8/2021	20	<2.0	0.01	<0.05	<0.01	<0.10	<0.11	70	<0.48	3.9	<0.01	<1
	6/29/2021	26	4.7	<0.01	<0.05	<0.01	<0.10	<0.11	63	<0.48	4	0.01	4
	7/20/2021	19	2.9	0.02	<0.05	<0.01	<0.10	<0.11	51	0.59	6.3	0.01	1
	8/17/2021	23	5.8	0.01	<0.05	<0.01	<0.10	<0.11	72	0.49	5.9	0.01	11
	Mean	21	3.5	0.02	0.05	0.01	0.12	0.13	61	0.50	4.9	0.02	4
	Stdev	4	1.7	0.017	0	0	0.05	0.05	11	0.05	1.1	0.03	4
	Max	26	5.8	0.05	0.05	0.01	0.22	0.23	72	0.59	6.3	0.08	11
	Min	16	2	0.01	0.05	0.01	0.1	0.11	47	0.48	3.9	0.01	1
	No. of Det.	5	3	3	0	0	1	1	5	2	5	4	4
PR-3M	5/11/2021	16	<2.0	<0.05	<0.05	<0.01	0.22	0.23	69	<0.48	4.1	<0.01	<1
	6/8/2021	21	<2.0	<0.01	<0.05	<0.01	<0.10	<0.11	57	<0.48	3.8	<0.01	1
	6/29/2021	24	2.4	<0.01	<0.05	<0.01	0.13	0.14	64	<0.48	3.8	<0.01	4
	7/20/2021	20	<2.0	0.02	<0.05	<0.01	0.23	0.24	78	<0.43	6.5	0.01	<1
	8/17/2021	24	<2.0	0.01	0.1	<0.01	0.16	0.17	79	<0.43	5.4	0.01	2
	Mean	21	2.1	0.02	0.06	0.01	0.17	0.18	69	0.46	4.7	0.01	2
	Stdev	3	0.2	0.017	0.02	0	0.06	0.06	9	0.03	1.2	0.00	1
	Max	24	2.4	0.05	0.1	0.01	0.23	0.24	79	0.48	6.5	0.01	4
	Min	16	2	0.01	0.05	0.01	0.1	0.11	57	0.43	3.8	0.01	1
	No. of Det.	5	1	2	1	0	4	4	5	0	5	2	3

Table 3-2 continued. Summary of surface, middle, and bottom water quality monitoring data for Prompton Reservoir in 2021

Station	Date	ALK mg/L	BOD5 mg/L	DISS-P mg/L	NH3 mg/L	NO2 mg/L	NO3 mg/L	PO4 mg/L	TDS mg/L	TKN mg/L	TOC mg/L	TP mg/L	TSS mg/L
PR-3D	5/11/2021	17	<2.0	<0.05	<0.05	<0.01	0.25	0.26	55	<0.48	4.1	<0.01	4
	6/8/2021	26	2.2	0.02	<0.05	<0.01	0.2	0.21	60	<0.48	4.3	0.02	42
	6/29/2021	30	6.3	<0.01	0.21	<0.01	<0.10	<0.11	61	<0.48	4.2	0.02	3
	7/20/2021	25	<2.0	0.04	0.17	<0.01	0.20	0.21	63	<0.43	6.6	0.02	2
	8/17/2021	25	<2.0	0.01	0.07	<0.01	<0.10	<0.11	35	2.35	4.6	0.02	<1
	Mean	25	3	0.03	0.11	0.01	0.17	0.18	55	0.84	4.8	0.02	10
	Stdev	5	2	0.02	0.075	0	0.07	0.07	11	0.84	1.0	0.004	18
	Max	30	6.3	0.05	0.21	0.01	0.25	0.26	63	2.35	6.6	0.02	42
	Min	17	2	0.01	0.05	0.01	0.1	0.11	35	0.43	4.1	0.01	1
	No. of Det.	5	2	3	3	0	3	3	5	1	5	4	4
PR-4S	5/11/2021	16	4.1	<0.05	<0.05	<0.01	0.22	0.23	77	<0.48	4.3	<0.01	<1
	6/8/2021	20	2.1	0.03	<0.05	<0.01	0.20	0.21	52	<0.48	4.3	<0.01	3
	6/29/2021	27	2.6	<0.01	<0.05	<0.01	0.24	0.25	68	<0.48	3.6	<0.01	<1
	7/20/2021	21	2.6	0.03	<0.05	<0.01	0.20	0.21	62	<0.43	6.4	0.02	<1
	8/17/2021	26	<2.0	0.02	0.06	<0.01	0.30	0.31	37	0.59	4.8	0.03	<1
	Mean	22	2.68	0.028	0.05	0.01	0.23	0.24	59	0.49	4.7	0.02	1.4
	Stdev	5	0.8	0.01	0.00	0	0.04	0.04	15	0.06	1.1	0.01	1
	Max	27	4.1	0.05	0.06	0.01	0.3	0.31	77	0.59	6.4	0.03	3
	Min	16	2	0.01	0.05	0.01	0.2	0.21	37	0.43	3.6	0.01	1
	No. of Det.	5	4	3	1	0	5	5	5	1	5	2	1

< Indicates a result less than the limit of quantification or limit of detection.
NS – Not Sampled

3.2.2 Nitrite and Nitrate

Nitrite (NO2) is a measure of a form of nitrogen that occurs as an intermediate in the nitrogen cycle. It is unstable and can rapidly be oxidized to nitrate or reduced to nitrogen gas. Nitrite is a source of nutrients for plants and can be toxic to aquatic life in relatively low concentrations. In 2021, nitrite concentrations in the waters of Prompton Reservoir measured at all stations and depths were less than the reporting limit of 0.01 mg/L (Table 3-2).

Nitrate (NO3) is the measure of the most oxidized and stable form of nitrogen. It is the principal form of combined nitrogen in natural waters. Nitrate is the primary form of nitrogen used by plants as a nutrient to stimulate plant growth. In 2021, concentrations measured at all stations and depths ranged from less than the laboratory reporting limit of 0.10 mg/L to 0.45 mg/L throughout the monitoring period (Table 3-2). Higher readings were seen in the lake release flows (PR-4S) and tributary inflow waters (PR-1S). The maximum nitrate measure of 0.45 mg/L was collected at station PR-1S on 29 June. This upstream tributary station also maintained the highest seasonal mean concentration of 0.35 mg/L.

Prompton Reservoir never exceeded the PADEP water quality standard for nitrite and nitrate during 2021. The standard is a summed concentration of nitrite and nitrate of less than 10 mg/L. Throughout the monitoring period, a maximum summed concentration for all stations and depths of 0.46 mg/L was measured at the upstream tributary surface water station PR-1S on 29 June.

3.2.3 Total Kjeldahl Nitrogen

Total Kjeldahl Nitrogen (TKN) is a measure of organic nitrogen that includes ammonia. Organic nitrogen is not immediately available for biological activity and is therefore not available for plant growth until decomposition to inorganic form occurs. Total Kjeldahl Nitrogen was uniformly low in the water column of Prompton Reservoir during 2021 with most sample concentrations less than the laboratory reporting limit of 0.43 mg/L and 0.48 mg/L (Table 3-2). The highest single sample concentration of 2.35 mg/L was measured in the bottom water sample at station PR-3D on 17 August.

3.2.4 Total Phosphorus

Total phosphorus (TP) is a measure of both organic and inorganic forms of phosphorus. It is an essential plant nutrient and is often the most limiting nutrient to plant growth in freshwater systems. Inputs of phosphorus are the prime contributing factors to eutrophication in most freshwater systems. Phosphorus bound to bottom sediments in lakes can be released when oxygen levels are depleted in bottom waters. This phosphorus then becomes available for plant growth.

EPA guidance for nutrient criteria in lakes and reservoirs suggests a minimum concentration for total phosphorus of 0.01-mg/L (EPA 2000). Lakes and reservoirs exceeding this concentration are more likely to experience algal bloom problems during the growing season. Samples collected throughout the Prompton watershed and reservoir routinely exceeded this concentration in 2021 with elevated measures occurring during the late June through August period. The highest measures of total phosphorus were seen in the deep bottom waters of the lake (Table 3-2). The highest single concentration of 0.08 mg/L TP was measured in the lake surface water sample at station PR-3S on 11 May. Higher concentrations of phosphorus in the lower water column are characteristic of temperature-stratified lakes. Low DO conditions in deeper waters create a reducing chemical environment that can mobilize phosphorus from bottom sediment. Prompton Reservoir experiences these conditions annually. Lower measurements of TP in lake surface waters at Prompton Reservoir are likely a product of algal phosphorus uptake during photosynthesis.

3.2.5 Dissolved Phosphorus

Dissolved phosphorus (Diss P) is a measure of the fraction of total phosphorus which is in solution in the water. This form is mobile in the water column and can be readily available to aquatic plants including algae. concentrations measured at most stations and depths in the water column of Prompton Reservoir were less than the reporting limit of 0.01 and 0.05 mg/L (Table 3-2). The highest single sample concentration of 0.06 mg/L was measured at stations PR-1S on 20 July.

3.2.6 Total Dissolved Solids

Total dissolved solids (TDS) is a measure of the amount of non-filterable dissolved material in the water. Dissolved salts such as sulfate, magnesium, chloride, and sodium contribute to elevated levels. Total dissolved solids in the water column of Prompton Reservoir stayed consistently low during 2021. Concentrations measured at all stations and depths ranged from 26 mg/L to 90 mg/L throughout the monitoring period (Table 3-2). Total dissolved solids measured at Prompton Reservoir in 2021 complied with PADEP water quality standards. The Pennsylvania standard for TDS is concentrations less than 500 mg/L as a monthly average with a maximum concentration of 750 mg/L.

3.2.7 Total Suspended Solids

Total suspended solids (TSS) is a measure of the amount of filterable particulate matter that is suspended within the water column. High concentrations increase the turbidity of the water and can hinder photosynthetic activity, result in damage to fish gills, and cause impairment to spawning habitat (smothering). During 2021, total suspended solids (TSS) concentrations at all stations and depths ranged between less than the reporting limit of 1.0 mg/L to 42 mg/L (Table 3-2). The highest single sample measure of 42 mg/L was measured in the lake bottom water sample at station PR-3D on 8 June. Uncharacteristically higher readings in water samples can be attributed to sample

collection error caused by disturbing bottom sediments inadvertently during sampling and those suspended materials being included in the sample. Higher TSS sample results may reflect this sampling method error.

3.2.8 Biochemical Oxygen Demand

Five-day biochemical oxygen demand (BOD5) is a measure of the oxygen-depleting burden imposed by organic material present in water. It measures the rate of oxygen uptake by organisms in the water sample over a laboratory established period. It is an indicator of the quality of a water body and the degree of pollution by biodegradable organic matter can therefore be inferred. The five-day biochemical oxygen demand and commonly accepted water quality inferences are as follows:

- 1-2 mg/L is associated with very clean water and little biodegradable wastes;
- 3-5 mg/L is associated with moderately clean water with some biodegradable wastes;
- 6-9 mg/L is associated with fairly polluted water, many bacteria, and much biodegradable wastes;
- 10+ mg/L is associated with very polluted water and large amounts of biodegradable wastes.

In 2021, biochemical oxygen demand concentrations in the waters and watershed of Prompton Reservoir ranged in values from less than the laboratory reporting limit of 2.0 mg/L up to 7.4 mg/L (Table 3-2). Values recorded in late June sampling at all stations were elevated with concentrations ranging from 2.4 mg/L to 6.3 mg/L. Considering the overall frequency of 2021 samples showing lower readings, it is inferred that Prompton Reservoir and its associated tributaries contain moderately clean waters with some biodegradable wastes in 2021.

3.2.9 Alkalinity

Alkalinity (ALK) is a measure of the acid-neutralizing capacity of water. Waters that have high alkalinity values are considered undesirable because of excessive hardness and high concentrations of sodium salts. Water with low alkalinity has little capacity to buffer acidic inputs and is susceptible to acidification (low pH). The PADEP standard is a minimum concentration of 20-mg/L $CaCO_3$ except where natural conditions are less.

Alkalinity of the water's in Prompton Reservoir remained near or greater than the state minimum standard during the 2021 sampling season (Table 3-2). Concentrations measured at all stations and depths during the monitoring period ranged from 16.0 mg/L to 30.0 mg/L. The natural alkalinity of water is largely dependent on the underlying geology and soils within the surrounding watershed. The alkalinity measured at Prompton Reservoir is likely a result of the regional geology and primary productivity. The reservoir waters and surrounding tributaries met PADEP alkalinity minimum criteria in 2021.

3.2.10 Total Organic Carbon

Total organic carbon (TOC) is a measure of the dissolved and particulate organic carbon in water. The bulk of organic carbon in water is composed of humic substances and partly degraded animal and plant materials. High levels of organic carbon coincide with a lowering of dissolved oxygen concentrations. Carbon is a nutrient required for biological processes. Total organic carbon in the water column of Prompton Reservoir at all stations and depths ranged from 2.3 mg/L to 6.6 mg/L (Table 3-2).

3.2.11 Chlorophyll *a*

Chlorophyll a is the measure of the plant chlorophyll a primary pigment which helps plants get energy from light. It is found in most plants, algae, and cyanobacteria. Chlorophyll a measure increases in relation to algal densities in a water body. In all months sampled in 2021, chlorophyll *a* measured in upstream surface waters had seasonal average of 2.48 ug/L. Concentrations at lake station PR-3S, from 0-10 feet of depth, ranged between 1.7 ug/L and 9.1 ug/L with a seasonal average of 5.14 ug/L (Appendix A). Chlorophyll a was collected using a YSI 6600 V2-4 sonde and chlorophyll sensor.

3.3 TROPHIC STATE DETERMINATION

Carlson's (1977) trophic state index (TSI) is a method of quantitatively expressing the magnitude of eutrophication for a lake. The trophic state analysis calculates separate indices for eutrophication based on measures of total phosphorus, chlorophyll *a*, and secchi disk. Index values for each parameter range on the same scale from 0 (least enriched) to 100 (most enriched). The resulting indices can also be compared to qualitative threshold values that correspond to levels of eutrophication. Classification of Prompton Reservoir was based on a single sample taken each month at station PR-3 during the sampling season (Figure 3-7).

TSIs calculated for measures of total phosphorus classified Prompton Reservoir as eutrophic in May (67.34), and oligotrophic in early June (37.35), late June (37.35), July (37.35), and August (37.35). TSIs calculated for measures of secchi disk depth classified Prompton Reservoir as eutrophic in May (50.75), late June (67.58), July (55.68) and August (99.39), and mesotrophic in early June (45.16). TSIs calculated for measures of chlorophyll *a* classified Prompton Reservoir as mesotrophic in May (48.66), early June (44.44), late June (46.64), July (48.55) and August (44.03). Chlorophyll a was measured with a YSI 6600 V2-4 sonde and chlorophyll sensor.

Carlson (1977) warned against averaging TSI values estimated for different parameters, and instead suggested giving priority to chlorophyll *a* in the summer and to phosphorus in the spring, fall, and winter. Considering this approach, the trophic state of the reservoir based on TSI's was in the mesotrophic range during most of the 2021 sampling period.

The EPA (1983) also provides criteria for defining the trophic conditions of lakes of the north-temperate zone based on concentrations of total phosphorus, chlorophyll *a*, and secchi depth (Table 3-3). Considering the general agreement between the EPA classifications with that of the Carlson (1977) calculated TSI values, the trophic condition of Prompton Reservoir would be considered mesotrophic during most of the 2021 sampling season.

Table 3-3. EPA trophic classification criteria and monthly measures for Prompton Reservoir in 2021.

Water Quality Variable	Oligo-trophic	Meso-trophic	Eutrophic	11 May	08 June	29 June	20 July	17 August
Total phos. (ppb)	<10	10-20	>20	80	<10	10	10	10
Chlorophyll (ppb)	<4	4-10	>10	6.3	4.1	5.13	6.23	3.93
Secchi depth (m)	>4	2-4	<2	1.9	2.8	1.25	1.35	0.07

3.4 RESERVOIR BACTERIA MONITORING

Total coliform bacteria include *Escherica coliform* (*E. coli*) and related bacteria that are associated with fecal discharges. Fecal coliform bacteria are a subgroup of the total coliform and are normally associated with waste derived from human and other warm-blooded animals and indicate the presence of fecal contamination but not the associated risk. With respect to EPA and PADEP water quality standards, fecal coliform bacteria has been replaced with a recommended e-coli criteria. Bacteria contamination was monitored in the tributary and lake surface waters at Prompton Reservoir from May through August during 2021 (Table 3-4). Prompton surface water samples were not analyzed for fecal coliform bacteria in 2021.

Escherichia coli is the most reliable indicator of fecal bacterial contamination of surface waters in the United States according to water quality standards set by the EPA (2000). The EPA recommendation for recreational water quality standards for E. coli is based on two criteria: a geometric mean of 126 organisms/100 ml (geometric mean of five samples collected over not more than a 30 consecutive day period) threshold and 235 organisms/100 ml (single water sample) threshold.

Total coliform values for all stations and dates ranged from 326 colonies/100-ml to >2420 colonies/100-ml. Bacteria in natural waters are common and their presence in the sample is not necessarily a human health concern. Given that Corps regular monitoring was completed utilizing single day grab samples, single sample results were compared to the EPA e-coli single sample criteria in 2021. Bacteria contamination was low in Prompton Reservoir but elevated in its upstream tributary during 2021. Two samples did

exceed the EPA single water sample threshold at upstream tributary station PR-1S on 08 and 29 June. Water contact recreation is not permitted at Prompton Reservoir.

Table 3-4. Bacteria counts (colonies/100 ml) at Prompton Reservoir during 2021. Shaded values exceed the Pennsylvania Department of Health single sample water quality standard for bathing beaches. NS = Not Sampled in 2021

STATION	DATE	Total Coliform (TC)		Fecal Coliform (FC)		Escherichia coli	
PR-1S	5/11/2021	>	2420		NS		91
	6/8/2021	>	2420		NS		261
	6/29/2021	>	2420		NS		260
	7/20/2021	>	2420		NS		161
	8/17/2021	>	2420		NS		214
PR-2S	5/11/2021		1050		NS		8
	6/8/2021		517		NS	<	1
	6/29/2021		326		NS	<	1
	7/20/2021	>	2420		NS		104
	8/17/2021	>	2420		NS	<	1
PR-3S	5/11/2021		461		NS		12
	6/8/2021		1550		NS		32
	6/29/2021		517		NS	<	1
	7/20/2021	>	2420		NS		61
	8/17/2021	>	2420		NS		111
PR-4S	5/11/2021		1730		NS		15
	6/8/2021		2420		NS		6
	6/29/2021		1730		NS		14
	7/20/2021	>	2420		NS		80
	8/17/2021		2420		NS		1

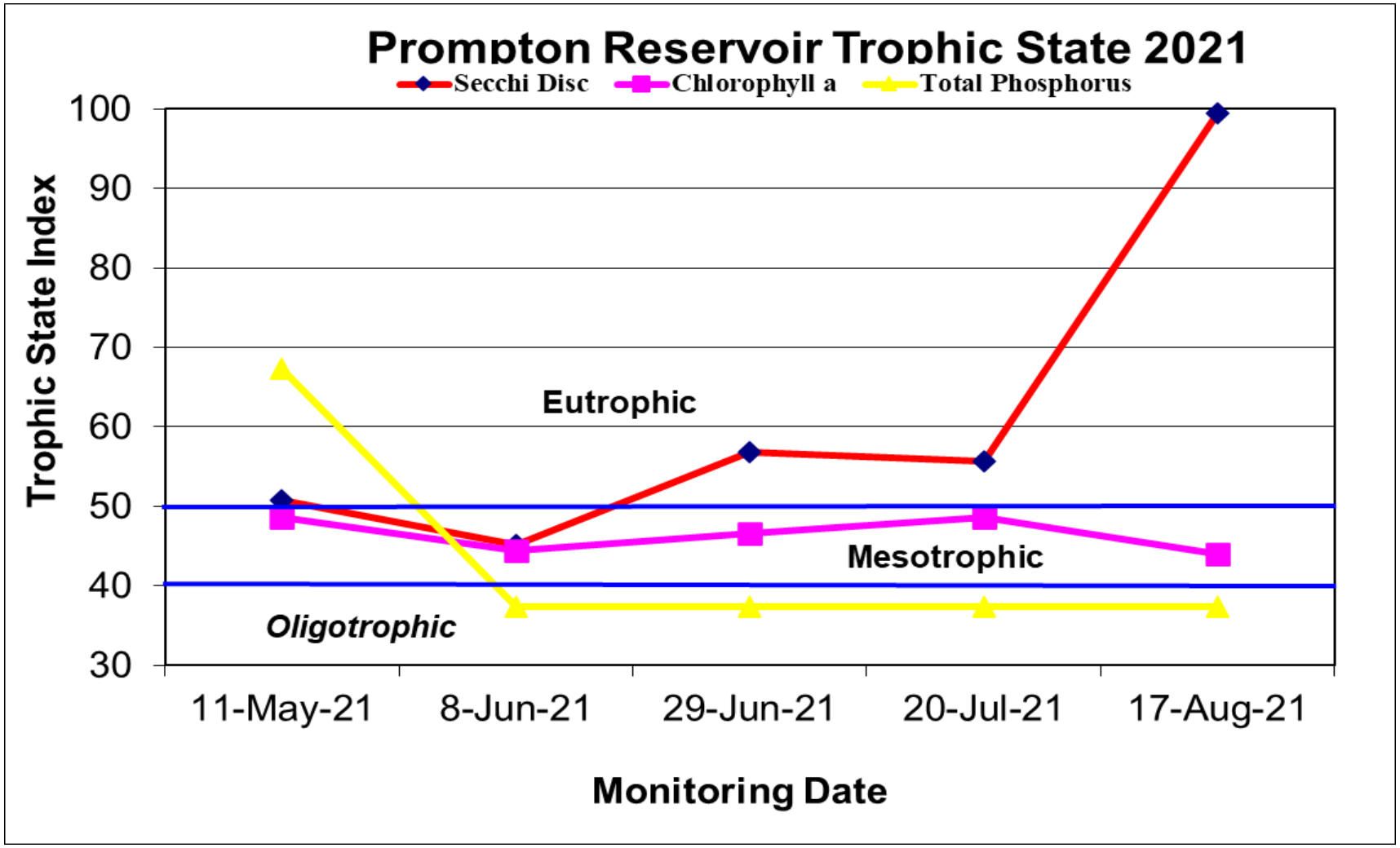

Figure 3-7. Trophic state indices calculated from secchi disk depth, concentrations of chlorophyll *a*, and total phosphorus measured in surface waters of Prompton Reservoir during 2021.

4.0 REFERENCES

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APPENDIX A

PROMPTON RESERVOIR 2021
STRATIFICATION DATA TABLES

2021 Prompton Profile Summary

Station	Date	Time	Depth	Temp	DO	DO	pH	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	C	%	mg/L		mV	mV	NTU	ug/L	mS/cm
PR-1S Upstream	5/11/2021	8:39:40	0.5	7.99	96.8	11.47	6.76	-27.8	142.3	0.4	3.4	0.04
	6/8/2021	8:20:33	0.5	17.76	96.1	9.14	7.47	-68	117.1	0.2	2.5	0.071
	6/29/2021	8:36:37	0.5	21.11	93.6	8.32	7.59	-75.4	215.4	0	1.5	0.087
	7/20/2021	8:36:59	0.5	18.59	95.2	8.9	7.34	-60.6	174.7	0.6	3.3	0.063
	8/17/2021	8:35:13	0.5	18.95	88.3	8.2	6.99	-40.3	178.1	0	1.7	0.085
PR-2 Mid-Lake	5/11/2021	10:40:28	0.5	12.27	97.4	10.43	6.73	-25.9	153.1	1	3.3	0.045
		10:39:48	5	11.23	97.2	10.66	6.75	-27.3	153.6	1.1	5.6	0.043
		10:39:11	10	11.09	96.8	10.65	6.75	-27	154.8	1.1	5.3	0.043
		10:36:53	15	11.14	97.1	10.67	6.75	-27.4	159.2	2	5.3	0.043
		10:35:58	16	10.36	92.9	10.39	6.73	-25.8	161.7	5.7	7.4	0.041
PR-2 Mid-Lake	6/8/2021	10:05:22	0.5	24.61	115.2	9.59	8.23	-113	68.2	0	2	0.07
		10:03:05	5	21.12	114.3	10.16	7.26	-55.9	101.7	0.2	3.7	0.066
		10:00:46	10	16.95	102.1	9.88	6.93	-37.1	101.3	0.5	5.1	0.059
		9:58:15	15	15.13	55.6	5.59	6.58	-17.2	103.1	1.9	4	0.058
		9:57:07	18	14.33	37.8	3.86	6.55	-15.8	101.9	6.4	1.9	0.06
PR-2 Mid-Lake	6/29/2021	9:57:15	0.5	28.14	151.8	11.85	8.96	-157	74.7	7.3	2.7	0.090
		9:55:39	5	24.98	153.6	12.7	9.02	-159	71.4	8.599999	5.3	0.084
		9:53:59	10	21.89	72.3	6.34	6.96	-39	89.6	3	2.1	0.073
		9:52:30	15	20.24	38.2	3.45	6.84	-31.7	85.2	3.6	2.8	0.075
		9:51:00	20	19.08	21.7	2.01	6.8	-29.6	76.9	10.7	2.8	0.078
PR-2 Mid-Lake	7/20/2021	9:59:01	0.5	22.89	93.6	8.05	6.92	-36.5	105.2	3.1	9.2	0.06
		9:57:26	5	22.04	76.2	6.66	6.71	-24.1	109.2	1.8	3.9	0.06
		9:55:52	10	21.34	78.9	6.99	6.73	-25.6	102	1	3.2	0.063
		9:53:23	15	19.88	42.6	3.88	6.71	-24.3	80.8	3.7	3.4	0.061
		9:52:00	20	19.63	34.8	3.19	6.79	-28.8	64.1	13.5	3.4	0.062
PR-2 Mid-Lake	8/17/2021	10:10:35	0.5	25.21	129.2	10.64	8.91	-153	75.5	13.1	7.1	0.079
		10:09:01	5	24.76	106.4	8.83	8.53	-130	79.9	11	5.3	0.077
		10:05:02	10	21.93	20.1	1.76	6.57	-16.5	82.5	1.7	2.4	0.076
		10:03:17	15	20.96	6.8	0.61	6.68	-22.4	60	1.9	1.7	0.079
		10:01:53	18	20.34	3.9	0.35	6.76	-27.6	36.4	2	2	0.082

2021 Prompton Profile Summary

Station	Date	Time	Depth	Temp	DO	DO	pH	pHmV	ORP	Turbidity	Chloro.	SpCond
	M/D/Y	hh:mm:ss	ft	C	%	mg/L		mV	mV	NTU	ug/L	mS/cm
		10:12:07	0.5	12.49	90.8	9.68	6.41	-8.2	130.3	1.1	5.7	0.046
PR-3		10:11:05	5	12.3	88.4	9.46	6.38	-6.2	130.7	0.9	7	0.046
Upstream		10:09:45	10	12.16	84.8	9.1	6.32	-3.2	131.2	1.3	6.2	0.046
of Dam	5/11/2021	10:08:31	15	11.56	75.8	8.25	6.24	1.2	132.7	2.3	2.6	0.046
		10:07:09	20	10.84	76.6	8.47	6.26	0.4	132.2	3.7	2.2	0.045
Secchi		10:05:35	25	10.58	79.7	8.87	6.29	-1.3	130.2	3.9	2.2	0.044
1.9		10:04:27	30	10.5	78.3	8.74	6.29	-1.5	128.3	5.8	2.3	0.044
M		10:01:11	32	10.49	79.2	8.84	6.37	-5.8	134.9	11.8	2.5	0.045
PR-3		9:27:47	0.5	24.88	111.9	9.27	7.96	-97.4	48.4	0.5	3	0.069
Upstream		9:26:43	5	21.37	114	10.09	7.86	-91	47.7	0.3	3.4	0.064
of Dam	6/8/2021	9:24:37	10	16.51	103.7	10.13	7.22	-53.9	67.9	0.3	5.9	0.057
		9:20:55	15	14.96	74	7.47	6.76	-27.6	61.9	0.3	4.4	0.056
Secchi		9:16:52	20	12.79	26.5	2.8	6.55	-15.8	12	4.8	2.9	0.053
2.80		9:15:02	25	11.35	10.3	1.13	6.57	-17	-18.7	3.7	2.3	0.051
M		9:12:35	30	10.47	4.7	0.53	6.77	-28.2	-78.4	5.5	2.1	0.082
PR-3		9:32:24	0.5	28.19	137.5	10.73	9.46	-187	29.3	4.9	1.7	0.087
Upstream		9:31:09	5	25.08	147	12.13	9.55	-191	24.8	7.6	4.9	0.084
of Dam		9:29:53	10	21.87	85.2	7.47	7.54	-72.2	36.1	3.6	8.8	0.072
	6/29/2021	9:27:31	15	20.3	44.1	3.98	6.97	-39.6	32.8	0.4	3.2	0.073
Secchi		9:25:47	20	15.97	6	0.59	7.01	-41.8	12.5	5.2	2.1	0.073
1.25		9:18:41	25	12.62	4	0.43	6.69	-23.9	-42.2	3.7	1.4	0.066
M		9:13:04	30	10.91	2.5	0.28	6.91	-36.1	-124	89	8.3	0.080
		9:31:24	0.5	23.5	111.6	9.49	7.79	-87.4	62.8	3.9	9.1	0.061
PR-3		9:28:06	5	22.36	73.5	6.38	7.03	-43	53.7	2.1	6	0.06
Upstream		9:25:36	10	20.9	40.6	3.63	6.69	-23	34.5	1.4	3.6	0.058
of Dam		9:24:23	15	20.21	35.1	3.18	6.62	-19.4	19.8	1.1	3.2	0.058
	7/20/2021	9:22:18	20	19.06	12.9	1.19	6.74	-26.2	-47.2	2.3	2.4	0.063
Secchi		9:21:17	25	15.15	2.6	0.27	6.87	-33.9	-116	2	1.5	0.091
1.35		9:20:19	30	11.2	2.3	0.25	6.99	-40.4	-155	5.8	2.1	0.117
M		9:16:37	32	11.05	2.7	0.29	7.07	-45.2	-189	15.9	1.8	0.122
PR-3		9:40:00	0.5	24.58	120.1	10	8.59	-134	79.1	11.5	5	0.075
Upstream		9:38:05	5	24.35	86.8	7.26	7.73	-83.6	70.9	9.4	4.4	0.071
of Dam		9:32:32	10	21.53	21	1.85	6.39	-5.9	23.1	0.4	2.4	0.066
	8/17/2021	9:30:30	15	20.68	7.5	0.68	6.43	-8.3	-7.4	0.2	2	0.072
Secchi		9:27:16	20	18.18	2.8	0.27	6.62	-19.3	-88.5	0	1.9	0.091
0.65		9:23:52	25	14.8	2.7	0.28	6.77	-27.9	-129	2.3	1.8	0.109
M		9:20:16	30	11.37	2.9	0.31	6.96	-38.7	-172	10.5	3	0.184
PR-4S	5/11/2021	8:24:59	0.5	11.95	98.1	10.58	6.83	-31.9	135.6	1.1	5.1	0.046
Dam	6/8/2021	8:06:34	0.5	16.45	86.5	8.46	7.34	-60.2	135.6	0.8	4.5	0.057
Outfall	6/29/2021	8:20:54	0.5	19.06	79.7	7.39	7.39	-63.3	231.1	0.5	2.6	0.074
	7/20/2021	8:21:19	0.5	22.32	91.1	7.91	7.45	-67.4	173	2.6	6.7	0.061
	8/17/2021	8:21:40	0.5	20.17	75.5	6.84	6.69	-23.4	185.2	0	2	0.072

APPENDIX B

PROMPTON RESERVOIR 2021
LABORATORY CUSTODY SHEETS

Certificate of Analysis

M.J. Reider Associates, Inc.
ENVIRONMENTAL TESTING LABORATORY
U.S. EPA/PA DEP #06-00003

Laboratory No.: 2114820
Report: 05/21/21
Lab Contact: Richard A Wheeler

Attention: David Wertz
Reported To: Tetra Tech
USACE, Phila Dist. Env.Resources Branch 100 Penn Square E.
Arlington, VA 22201

Project: 2021 - Prompton Reservoir

Lab ID: 2114820-01 **Collected By:** Client **Sampled:** 05/11/21 08:45 **Received:** 05/11/21 14:15
Sample Desc: PR-1S **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.05	mg/l		0.05	SM 4500-P F	05/14/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	16	mg CaCO3/L		2	SM 2320 B	05/18/21	C-51	APR
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	05/12/21	U	APR
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	05/12/21 15:05		SWA
Nitrate as N	0.26	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	05/11/21 15:12	J	TML
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/11/21 15:12	U	TML
Nitrate+Nitrite as N	<0.27	mg/l	0.108	1.10	CALCULATED	05/11/21 15:12		TML
Nitrogen, Total Kjeldahl (TKN)	<0.48	mg/l	0.48	0.50	EPA 351.2	05/18/21	U	TML
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	05/13/21		TML
Solids, Total Dissolved	26	mg/l	4	5	SM 2540 C	05/12/21		TMH
Total Organic Carbon	4.0	mg/l	0.3	0.5	SM 5310 C	05/12/21		ALD
Solids, Total Suspended	1	mg/l	1	1	SM 2540 D	05/12/21		ALD

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	91	mpn/100ml	1	SM 9223 B/Quantitray	5/11/21 15:27	5/12/21 16:39		JMW
Total Coliform	>2420	mpn/100ml	1	SM 9223 B/Quantitray	5/11/21 15:27	5/12/21 16:39		JMW

Lab ID: 2114820-02 **Collected By:** Client **Sampled:** 05/11/21 10:30 **Received:** 05/11/21 14:15
Sample Desc: PR-2S **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.05	mg/l		0.05	SM 4500-P F	05/14/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	17	mg CaCO3/L		2	SM 2320 B	05/18/21	C-51a	APR
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	05/12/21	U	APR
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	05/12/21 15:05		SWA
Nitrate as N	0.21	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	05/11/21 15:29	J	TML
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/11/21 15:29	U	TML
Nitrate+Nitrite as N	<0.22	mg/l	0.108	1.10	CALCULATED	05/11/21 15:29		TML
Nitrogen, Total Kjeldahl (TKN)	<0.48	mg/l	0.48	0.50	EPA 351.2	05/18/21	U	TML
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	05/13/21		TML
Solids, Total Dissolved	29	mg/l	4	5	SM 2540 C	05/12/21		TMH
Total Organic Carbon	4.2	mg/l	0.3	0.5	SM 5310 C	05/12/21		ALD
Solids, Total Suspended	<1	mg/l	1	1	SM 2540 D	05/12/21		ALD

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	8	mpn/100ml	1	SM 9223 B/Quantitray	5/11/21 15:27	5/12/21 16:39		JMW
Total Coliform	1050	mpn/100ml	1	SM 9223 B/Quantitray	5/11/21 15:27	5/12/21 16:39		JMW

Lab ID: 2114820-03 **Collected By:** Client **Sampled:** 05/11/21 10:30 **Received:** 05/11/21 14:15
Sample Desc: PR-2M **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.05	mg/l		0.05	SM 4500-P F	05/14/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	16	mg CaCO3/L		2	SM 2320 B	05/18/21	C-51	APR
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	05/12/21	U	APR
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	05/12/21 15:05		SWA
Nitrate as N	0.21	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	05/11/21 16:20	J	TML
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/11/21 16:20	U	TML
Nitrate+Nitrite as N	<0.22	mg/l	0.108	1.10	CALCULATED	05/11/21 16:20		TML
Nitrogen, Total Kjeldahl (TKN)	<0.48	mg/l	0.48	0.50	EPA 351.2	05/18/21	U	TML
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	05/13/21		TML
Solids, Total Dissolved	47	mg/l	4	5	SM 2540 C	05/12/21		TMH
Total Organic Carbon	4.3	mg/l	0.3	0.5	SM 5310 C	05/12/21		ALD
Solids, Total Suspended	2	mg/l	1	1	SM 2540 D	05/12/21		ALD

Lab ID: 2114820-04 **Collected By:** Client **Sampled:** 05/11/21 10:30 **Received:** 05/11/21 14:15
Sample Desc: PR-2D **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.05	mg/l		0.05	SM 4500-P F	05/14/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	16	mg CaCO3/L		2	SM 2320 B	05/18/21	C-51	APR
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	05/12/21	U	APR
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	05/12/21 12:50		SWA
Nitrate as N	0.22	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	05/11/21 16:36	J	TML
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/11/21 16:36	U	TML
Nitrate+Nitrite as N	<0.23	mg/l	0.108	1.10	CALCULATED	05/11/21 16:36		TML
Nitrogen, Total Kjeldahl (TKN)	<0.48	mg/l	0.48	0.50	EPA 351.2	05/18/21	U	TML
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	05/13/21		TML
Solids, Total Dissolved	28	mg/l	4	5	SM 2540 C	05/12/21		TMH
Total Organic Carbon	4.5	mg/l	0.3	0.5	SM 5310 C	05/12/21		ALD
Solids, Total Suspended	1	mg/l	1	1	SM 2540 D	05/12/21		ALD

Lab ID: 2114820-05 **Collected By:** Client **Sampled:** 05/11/21 10:00 **Received:** 05/11/21 14:15
Sample Desc: PR-3S **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.05	mg/l		0.05	SM 4500-P F	05/14/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	16	mg CaCO3/L		2	SM 2320 B	05/18/21	C-51	APR
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	05/12/21	U	APR
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	05/12/21 15:05		SWA
Nitrate as N	0.22	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	05/11/21 16:53	J	TML
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/11/21 16:53	U	TML
Nitrate+Nitrite as N	<0.23	mg/l	0.108	1.10	CALCULATED	05/11/21 16:53		TML
Nitrogen, Total Kjeldahl (TKN)	<0.48	mg/l	0.48	0.50	EPA 351.2	05/18/21	U	TML
Phosphorus as P, Total	0.08	mg/l	0.01	0.01	SM 4500-P F	05/13/21		TML
Solids, Total Dissolved	47	mg/l	4	5	SM 2540 C	05/12/21		TMH
Total Organic Carbon	4.2	mg/l	0.3	0.5	SM 5310 C	05/12/21		ALD
Solids, Total Suspended	1	mg/l	1	1	SM 2540 D	05/12/21		ALD

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	12	mpn/100ml	1	SM 9223 B/Quantitray	5/11/21 15:27	5/12/21 16:39		JMW
Total Coliform	461	mpn/100ml	1	SM 9223 B/Quantitray	5/11/21 15:27	5/12/21 16:39		JMW

Lab ID: 2114820-06 **Collected By:** Client **Sampled:** 05/11/21 10:00 **Received:** 05/11/21 14:15
Sample Desc: PR-3M **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.05	mg/l		0.05	SM 4500-P F	05/14/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	16	mg CaCO3/L		2	SM 2320 B	05/18/21	C-51	APR
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	05/12/21	U	APR
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	05/12/21 15:05		SWA
Nitrate as N	0.22	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	05/11/21 17:10	J	TML
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/11/21 17:10	U	TML
Nitrate+Nitrite as N	<0.23	mg/l	0.108	1.10	CALCULATED	05/11/21 17:10		TML
Nitrogen, Total Kjeldahl (TKN)	<0.48	mg/l	0.48	0.50	EPA 351.2	05/18/21	U	TML
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	05/13/21		TML
Solids, Total Dissolved	69	mg/l	4	5	SM 2540 C	05/12/21		TMH
Total Organic Carbon	4.1	mg/l	0.3	0.5	SM 5310 C	05/12/21		ALD
Solids, Total Suspended	<1	mg/l	1	1	SM 2540 D	05/12/21		ALD

Lab ID: 2114820-07 **Collected By:** Client **Sampled:** 05/11/21 10:00 **Received:** 05/11/21 14:15
Sample Desc: PR-3D **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.05	mg/l		0.05	SM 4500-P F	05/14/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	17	mg CaCO3/L		2	SM 2320 B	05/18/21	C-51a	APR
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	05/12/21	U	APR
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	05/12/21 15:05		SWA
Nitrate as N	0.25	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	05/11/21 17:27	J	TML
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/11/21 17:27	U	TML
Nitrate+Nitrite as N	<0.26	mg/l	0.108	1.10	CALCULATED	05/11/21 17:27		TML
Nitrogen, Total Kjeldahl (TKN)	<0.48	mg/l	0.48	0.50	EPA 351.2	05/18/21	U	TML
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	05/13/21		TML
Solids, Total Dissolved	55	mg/l	4	5	SM 2540 C	05/12/21		TMH
Total Organic Carbon	4.1	mg/l	0.3	0.5	SM 5310 C	05/12/21		ALD
Solids, Total Suspended	4	mg/l	1	1	SM 2540 D	05/12/21		ALD

Lab ID: 2114820-08 **Collected By:** Client **Sampled:** 05/11/21 08:30 **Received:** 05/11/21 14:15
Sample Desc: PR-4S **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.05	mg/l		0.05	SM 4500-P F	05/14/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	16	mg CaCO3/L		2	SM 2320 B	05/18/21	C-51	APR
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	05/12/21	U	APR
Biochemical Oxygen Demand	4.1	mg/l	2.0	2.0	SM 5210 B	05/12/21 15:05		SWA
Nitrate as N	0.22	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	05/11/21 17:44	J	TML
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	05/11/21 17:44	U	TML
Nitrate+Nitrite as N	<0.23	mg/l	0.108	1.10	CALCULATED	05/11/21 17:44		TML
Nitrogen, Total Kjeldahl (TKN)	<0.48	mg/l	0.48	0.50	EPA 351.2	05/18/21	U	TML
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	05/13/21		TML
Solids, Total Dissolved	77	mg/l	4	5	SM 2540 C	05/12/21		TMH
Total Organic Carbon	4.3	mg/l	0.3	0.5	SM 5310 C	05/12/21		ALD
Solids, Total Suspended	<1	mg/l	1	1	SM 2540 D	05/12/21		ALD

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	15	mpn/100ml	1	SM 9223 B/Quantitray	5/11/21 15:27	5/12/21 16:39		JMW
Total Coliform	1730	mpn/100ml	1	SM 9223 B/Quantitray	5/11/21 15:27	5/12/21 16:39		JMW

Preparation Methods

Specific Method	Preparation Method	Prep Batch	Prepared Date	Prepared By
2114820-01				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1E0663	05/13/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1E0618	05/12/2021	TML
2114820-02				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1E0663	05/13/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1E0618	05/12/2021	TML
2114820-03				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1E0663	05/13/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1E0618	05/12/2021	TML
2114820-04				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1E0663	05/13/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1E0618	05/12/2021	TML
2114820-05				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1E0663	05/13/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1E0618	05/12/2021	TML
2114820-06				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1E0663	05/13/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1E0618	05/12/2021	TML
2114820-07				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1E0663	05/13/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1E0618	05/12/2021	TML
2114820-08				
Dissolved General Chemistry				

SM 4500-P F	SM 4500-P B	B1E0663	05/13/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1E0618	05/12/2021	TML

Notes and Definitions

C-51	The alkalinity to pH 4.2 = 16 mg CaCO3/L.
C-51a	The alkalinity to pH 4.2 = 17 mg CaCO3/L.
G-11	The sample was filtered after it was received at the laboratory.
G-17	The sample was preserved in the laboratory.
J	Estimated value
U	Analyte was not detected above the indicated value.

M.J. Reider Associates, Inc.
107 Angelica St, Reading PA, 19611
610-374-5129 www.mjreider.com

WORK ORDER
Chain of Custody

2114820

Client Code: 3157 **Client:** Tetra Tech
Project Manager: Richard A Wheeler **Project:** 2021 - Prompton Reservoir
Report To: Tetra Tech - David Wertz - USACE, Phila Dist. Env.Resources Branch 100 Penn Square E., Arlington, VA 22201
Invoice To: Tetra Tech - David Wertz - USACE, Phila Dist. Env.Resources Branch 100 Penn Square E., Arlington, VA 22201

Comments:

Collected By : (Full Name) Gregory Wacik

2114820-01 PR-1S

Matrix: Non-Potable Water Date: 5/11/21
Type: Grab Time: 0845

BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B
Alk SM 2320B, NH3-N D6919-03, PO4 SM 4500P-E, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

2114820-02 PR-2S

Matrix: Non-Potable Water Date: 5/11/21
Type: Grab Time: 1030

BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B
Alk SM 2320B, NH3-N D6919-03, PO4 SM 4500P-E, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By	Date/Time	Received By	Date/Time
Gregory Wacik	5/11/21 1300	[illegible]	5-12-21 1305
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received at Laboratory By	Date/Time
		[illegible]	5-12-21 1415

Sample Kit Prepared By: JSV P	Date/Time 4-28-21
Sample Temp (°C):	4.1
Samples on Ice?	Yes No NA
Approved By:	BSW
Entered By:	

Printed: 4/28/2021 9:16:16AM

Report Template: Yko WorkOrder COC 1s

M.J. Reider Associates, Inc.

2114820

Client Code: 3157 **Client:** Tetra Tech

Project Manager: Richard A Wheeler **Project:** 2021 - Prompton Reservoir

Comments:

Collected By : (Full Name) Gregory Wacik

2114820-03 PR-2M

PO4-D SM 4500P-F, BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2
TOC SM 5310C, TSS SM 2540D, TDS SM 2540C, Alk SM 2320B, PO4 SM 4500P-E, NH3-N D6919-03, TKN EPA 351.2

Matrix: Non-Potable Water
Type: Grab
Date: 5/11/21
Time: 1030

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2114820-04 PR-2D

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F
Alk SM 2320B, NH3-N D6919-03, PO4 SM 4500P-E, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water
Type: Grab
Date: 5/11/21
Time: 1030

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2114820-05 PR-3S

BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, PO4-D SM 4500P-F, TC (#) SM 9223B, NO2-N, NO3-N, Combined NO3+NO2
Alk SM 2320B, NH3-N D6919-03, TDS SM 2540C, TKN EPA 351.2, PO4 SM 4500P-E, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water
Type: Grab
Date: 5/11/21
Time: 1000

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By	5/11/21 1300 Date/Time	Received By	5-11-21 1325 Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received at Laboratory By	5-11-21 1415 Date/Time

Sample Kit Prepared By:	Date/Time: 4-28-21
Sample Temp (°C):	4
Samples on Ice?	Yes No NA
Approved By:	
Entered By:	

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

Printed: 4/28/2021 9:16:16AM

Report Template: Std WorkOrder COC 1s

M.J. Reider Associates, Inc.

Client Code: 3157 **Client:** Tetra Tech

Project Manager: Richard A Wheeler **Project:** 2021 - Prompton Reservoir

Comments:

Collected By : (Full Name) Gregory Wacik

2114820-06 PR-3M

NO2-N EPA 300.0, NO3-N EPA 300.0, BOD SM 5210B, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F
NH3-N D6919-03, PO4 SM 4500P-E, TOC SM 5310C, TSS SM 2540D, Alk SM 2320B, TDS SM 2540C, TKN EPA 351.2

Matrix: Non-Potable Water Date: 5/11/21
Type: Grab Time: 1000

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2114820-07 PR-3D

BOD SM 5210B, PO4-D SM 4500P-F, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2
Alk SM 2320B, NH3-N D6919-03, PO4 SM 4500P-E, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water Date: 5/11/21
Type: Grab Time: 1000

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2114820-08 PR-4S

EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, BOD SM 5210B, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B
NH3-N D6919-03, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D, Alk SM 2320B, PO4 SM 4500P-E

Matrix: Non-Potable Water Date: 5/11/21
Type: Grab Time: 0830

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By	5/11/21 1300 Date/Time	Received By	5-11-21 1305 Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received at Laboratory By	5-11-21 1415 Date/Time

Sample Kit Prepared By:	Date/Time 4-28-21
Sample Temp (°C):	4
Samples on Ice?	Yes No NA
Approved By:	
Entered By:	

Report Template:

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

Printed: 4/28/2021 9:16:16AM

MJRA Terms & Conditions

All samples submitted must be accompanied by signed documentation representing a Chain of Custody (COC). The COC Record acts as a contract between the client and MJRA. Signing the COC form gives approval for MJRA to perform the requested analyses and is an agreement to pay for the cost of such analyses**.** COC Records must be completed in black or blue indelible ink (must not run when wet). COC documentation begins at the time of sample collection. Client is required to document all sample details prior to releasing samples to MJRA. All samples must be placed on ice immediately after sampling and shipped or delivered to the laboratory in a manner that will maintain the sample temperature above freezing and below 6C (loose ice is preferred)**.**

Sample Submission, Sample Acceptance & Sampling Containers

Included on the COC must be the sample description, date and time of collection (including start and stop for composites), container size and type, preservative information, sample matrix, indication of whether the sample is a grab or composite, number of containers & a list of the tests to be performed. Poor sample collection technique, inappropriate sampling containers and/or improper sample preservation may lead to sample rejection. Suitable sample containers, labels, and preservatives (as applicable), along with blank COCs are provided at no additional cost.

Turnaround Times (TAT)

Average TAT for test results range from 5 to 15 working days depending on the specific analyses and time of year submitted. Faster turnaround times (*RUSH TAT) may be available depending on the current workload in a particular department and the nature of the analyses requested. We encourage you to verify requests for expedited sample results with one of our Technical Directors prior to sample submittal. Without confirmation from a Technical Director, your results may not be completed by your deadline. *RUSH TAT Surcharges are applied for expedited turnaround times.

Analytical Results, Sample Collection Integrity & Subcontracting

Analytical values are for the sample as submitted and relate only to the item tested. The value indicates a snapshot of the constituent content of the sample at the time of sample collection. Analytical results can be impacted by poor sample collection technique and/or improper preservation. All sample collection completed by MJRA was performed in accordance with applicable regulatory protocols or as specified in customer specific sampling plans. Constituent content will vary over time based on the matrix of the sample and the physical and chemical changes to its environment. All sample results and laboratory reports are strictly confidential. Results will not be available to anyone except the primary client or authorized party representing the client unless MJRA receives additional permissions from the client. When necessary, MJRA will subcontract certain analyses to a third party accredited laboratory. If client prohibits subcontracting, it must be provided in writing and include instruction on how to proceed with client samples that require third party analyses.

Payment Terms

Payment Terms are Net 30 days. Prices are subject to change without notice. A standing monthly charge of 1.5% of the clients over-30-day-unpaid balance may be added to the balance after 30 days and each month thereafter (day 31, 61, 91 etc.). The laboratory accepts all major credit cards, ACH transactions, checks and cash. New clients must pay for all services rendered prior to sample collection and/or in some cases report processing. Clients must contact the MJRA accounting department to pursue a credit-based account. MJRA reserves the right to terminate the client's credit account and to refuse to perform additional services on a credit basis if any balance is outstanding for more than 60 days.

Warranty & Litigation

MJRA does not guarantee any results of its services but has agreed to use its best efforts, in accordance with the standards and practices of the industry, to cause such results to be accurate and complete. We disclaim any other warranties, expressed or implied, including a warranty of fitness for a particular purpose and warranty of merchantability. Clients agree that they shall reimburse MJRA for any and all fees, cost and litigation expenses, including reasonable attorney fees incurred by MJRA in obtaining payment for the services rendered. All costs associated with compliance with any subpoena for documents, testimony, or any other purpose relating to work performed by MJRA, for a client, shall be paid by that client. MJRA's aggregate liability for negligent acts and omissions and of an intentional breach by MJRA will not exceed the fee paid for the services. Client agrees to indemnify and hold MJRA harmless for any and all liabilities in excess of said amount. Neither MJRA nor the client shall be liable to the other for special, incidental consequential or punitive liability or damages included but not limited to those arising from delay, loss of use, loss of profits or revenues. MJRA will not be liable to the client unless the client has notified MJRA of the discovery of the alleged negligent act, error, omissions or breach within 30 days of the day of its discovery and within one year of the date of invoice.

Reviewed and Approved by:

Richard A Wheeler
Director of Field Services

NELAP accredited by PA. (PADEP #06-00003) Visit our website to view our current
NELAC accreditations for various drinking water, wastewater and solid & chemical materials analytes.
Additional accreditations by MD (261), NY(12094)

Certificate of Analysis

M.J. Reider Associates, Inc.
ENVIRONMENTAL TESTING LABORATORY
U.S. EPA/PA DEP #06-00003

Laboratory No.: 2116074
Report: 06/21/21
Lab Contact: Richard A Wheeler

Attention: David Wertz
Reported To: Tetra Tech
USACE, Phila Dist. Env.Resources Branch 100 Penn Square E.
Arlington, VA 22201

Project: 2021 - Prompton Reservoir

Lab ID: 2116074-01 **Collected By:** Client **Sampled:** 06/08/21 08:00 **Received:** 06/08/21 13:50
Sample Desc: PR-1S **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.02	mg/l		0.01	SM 4500-P F	06/10/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	25	mg CaCO3/L		2	SM 2320 B	06/14/21		APR
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	06/09/21	U	APR
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	06/09/21 14:32	C-37	ASD
Nitrate as N	0.43	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	06/08/21 19:24	J	JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/08/21 19:24	U	JAF
Nitrate+Nitrite as N	<0.44	mg/l	0.108	1.10	CALCULATED	06/08/21 19:24		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.48	mg/l	0.48	0.50	EPA 351.2	06/16/21	U, Q-10	TML
Phosphorus as P, Total	0.01	mg/l	0.01	0.01	SM 4500-P F	06/10/21		TML
Solids, Total Dissolved	62	mg/l	4	5	SM 2540 C	06/09/21		TMH
Total Organic Carbon	3.2	mg/l	0.3	0.5	SM 5310 C	06/09/21		ALD
Solids, Total Suspended	4	mg/l	1	1	SM 2540 D	06/09/21		ALD

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	261	mpn/100ml	1	SM 9223 B/Quantitray	6/8/21 14:29	6/9/21 14:31		DRW
Total Coliform	>2420	mpn/100ml	1	SM 9223 B/Quantitray	6/8/21 14:29	6/9/21 14:31		DRW

Lab ID: 2116074-02 **Collected By:** Client **Sampled:** 06/08/21 10:00 **Received:** 06/08/21 13:50
Sample Desc: PR-2S **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	06/10/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	22	mg CaCO3/L		2	SM 2320 B	06/14/21		APR
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	06/09/21	U	APR
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	06/09/21 14:32	C-37	ASD
Nitrate as N	<0.10	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	06/08/21 20:48	U	JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/08/21 20:48	U	JAF
Nitrate+Nitrite as N	<0.11	mg/l	0.108	1.10	CALCULATED	06/08/21 20:48		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.48	mg/l	0.48	0.50	EPA 351.2	06/12/21	U	TML
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	06/10/21		TML
Solids, Total Dissolved	43	mg/l	4	5	SM 2540 C	06/09/21		TMH
Total Organic Carbon	3.8	mg/l	0.3	0.5	SM 5310 C	06/09/21		ALD
Solids, Total Suspended	6	mg/l	1	1	SM 2540 D	06/09/21		ALD

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	<1	mpn/100ml	1	SM 9223 B/Quantitray	6/8/21 14:29	6/9/21 14:31		DRW
Total Coliform	517	mpn/100ml	1	SM 9223 B/Quantitray	6/8/21 14:29	6/9/21 14:31		DRW

Lab ID: 2116074-03 **Collected By:** Client **Sampled:** 06/08/21 10:00 **Received:** 06/08/21 13:50
Sample Desc: PR-2M **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	06/10/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	20	mg CaCO3/L		2	SM 2320 B	06/14/21		APR
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	06/09/21	U	APR
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	06/09/21 14:32	C-37	ASD
Nitrate as N	<0.10	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	06/08/21 21:05	U	JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/08/21 21:05	U	JAF
Nitrate+Nitrite as N	<0.11	mg/l	0.108	1.10	CALCULATED	06/08/21 21:05		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.48	mg/l	0.48	0.50	EPA 351.2	06/12/21	U	TML
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	06/10/21		TML
Solids, Total Dissolved	86	mg/l	4	5	SM 2540 C	06/09/21		TMH
Total Organic Carbon	3.7	mg/l	0.3	0.5	SM 5310 C	06/09/21		ALD
Solids, Total Suspended	5	mg/l	1	1	SM 2540 D	06/09/21		ALD

Lab ID: 2116074-04 **Collected By:** Client **Sampled:** 06/08/21 10:00 **Received:** 06/08/21 13:50
Sample Desc: PR-2D **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	06/10/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	21	mg CaCO3/L		2	SM 2320 B	06/14/21		APR
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	06/09/21	U	APR
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	06/09/21 14:32	C-37	ASD
Nitrate as N	0.15	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	06/08/21 19:58	J	JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/08/21 19:58	U	JAF
Nitrate+Nitrite as N	<0.16	mg/l	0.108	1.10	CALCULATED	06/08/21 19:58		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.48	mg/l	0.48	0.50	EPA 351.2	06/12/21	U	TML
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	06/10/21		TML
Solids, Total Dissolved	90	mg/l	4	5	SM 2540 C	06/09/21		TMH
Total Organic Carbon	3.9	mg/l	0.3	0.5	SM 5310 C	06/09/21		ALD
Solids, Total Suspended	3	mg/l	1	1	SM 2540 D	06/09/21		ALD

Lab ID: 2116074-05 **Collected By:** Client **Sampled:** 06/08/21 09:15 **Received:** 06/08/21 13:50
Sample Desc: PR-3S **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l		0.01	SM 4500-P F	06/16/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	20	mg CaCO3/L		2	SM 2320 B	06/14/21		APR
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	06/09/21	U	APR
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	06/08/21 17:10		MRW
Nitrate as N	<0.10	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	06/08/21 19:41	U	JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/08/21 19:41	U	JAF
Nitrate+Nitrite as N	<0.11	mg/l	0.108	1.10	CALCULATED	06/08/21 19:41		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.48	mg/l	0.48	0.50	EPA 351.2	06/12/21	U	TML
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	06/16/21		TML
Solids, Total Dissolved	70	mg/l	4	5	SM 2540 C	06/09/21		TMH
Total Organic Carbon	3.9	mg/l	0.3	0.5	SM 5310 C	06/09/21		ALD
Solids, Total Suspended	<1	mg/l	1	1	SM 2540 D	06/09/21		ALD

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	32	mpn/100ml	1	SM 9223 B/Quantitray	6/8/21 14:29	6/9/21 14:31		DRW
Total Coliform	1550	mpn/100ml	1	SM 9223 B/Quantitray	6/8/21 14:29	6/9/21 14:31		DRW

Lab ID: 2116074-06 **Collected By:** Client **Sampled:** 06/08/21 09:15 **Received:** 06/08/21 13:50
Sample Desc: PR-3M **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	06/10/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	21	mg CaCO3/L		2	SM 2320 B	06/14/21		APR
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	06/09/21	U	APR
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	06/08/21 17:10		MRW
Nitrate as N	<0.10	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	06/08/21 21:55	U	JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/08/21 21:55	U	JAF
Nitrate+Nitrite as N	<0.11	mg/l	0.108	1.10	CALCULATED	06/08/21 21:55		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.48	mg/l	0.48	0.50	EPA 351.2	06/12/21	U	TML
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	06/10/21		TML
Solids, Total Dissolved	57	mg/l	4	5	SM 2540 C	06/09/21		TMH
Total Organic Carbon	3.8	mg/l	0.3	0.5	SM 5310 C	06/09/21		ALD
Solids, Total Suspended	1	mg/l	1	1	SM 2540 D	06/09/21		ALD

Lab ID: 2116074-07 **Collected By:** Client **Sampled:** 06/08/21 09:15 **Received:** 06/08/21 13:50
Sample Desc: PR-3D **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.02	mg/l		0.01	SM 4500-P F	06/10/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	26	mg CaCO3/L		2	SM 2320 B	06/14/21		APR
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	06/09/21	U	APR
Biochemical Oxygen Demand	2.2	mg/l	2.0	2.0	SM 5210 B	06/15/21 12:23	C-34	SWA
Nitrate as N	0.20	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	06/08/21 20:15	J	JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/08/21 20:15	U	JAF
Nitrate+Nitrite as N	<0.21	mg/l	0.108	1.10	CALCULATED	06/08/21 20:15		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.48	mg/l	0.48	0.50	EPA 351.2	06/12/21	U	TML
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	06/10/21		TML
Solids, Total Dissolved	60	mg/l	4	5	SM 2540 C	06/09/21		TMH
Total Organic Carbon	4.3	mg/l	0.3	0.5	SM 5310 C	06/09/21		ALD
Solids, Total Suspended	42	mg/l	1	1	SM 2540 D	06/09/21		ALD

Lab ID: 2116074-08 **Collected By:** Client **Sampled:** 06/08/21 08:30 **Received:** 06/08/21 13:50
Sample Desc: PR-4S **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.03	mg/l		0.01	SM 4500-P F	06/16/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	20	mg CaCO3/L		2	SM 2320 B	06/14/21	C-51	APR
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	06/09/21	U	APR
Biochemical Oxygen Demand	2.1	mg/l	2.0	2.0	SM 5210 B	06/09/21 14:32	C-37	ASD
Nitrate as N	0.20	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	06/08/21 20:31	J	JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/08/21 20:31	U	JAF
Nitrate+Nitrite as N	<0.21	mg/l	0.108	1.10	CALCULATED	06/08/21 20:31		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.48	mg/l	0.48	0.50	EPA 351.2	06/12/21	U	TML
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	06/16/21		TML
Solids, Total Dissolved	52	mg/l	4	5	SM 2540 C	06/09/21		TMH
Total Organic Carbon	4.3	mg/l	0.3	0.5	SM 5310 C	06/09/21		ALD
Solids, Total Suspended	3	mg/l	1	1	SM 2540 D	06/09/21		ALD

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	6	mpn/100ml	1	SM 9223 B/Quantitray	6/8/21 14:29	6/9/21 14:31		DRW
Total Coliform	2420	mpn/100ml	1	SM 9223 B/Quantitray	6/8/21 14:29	6/9/21 14:31		DRW

Preparation Methods

Specific Method	Preparation Method	Prep Batch	Prepared Date	Prepared By
2116074-01				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1F0505	06/09/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1F0573	06/09/2021	SNF
2116074-02				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1F0505	06/09/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1F0573	06/09/2021	SNF
2116074-03				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1F0505	06/09/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1F0573	06/09/2021	SNF
2116074-04				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1F0505	06/09/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1F0573	06/09/2021	SNF
2116074-05				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1F0761	06/11/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1F0763	06/11/2021	TML
2116074-06				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1F0505	06/09/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1F0573	06/09/2021	SNF
2116074-07				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1F0505	06/09/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1F0573	06/09/2021	SNF
2116074-08				
Dissolved General Chemistry				

SM 4500-P F	SM 4500-P B	B1F0761	06/11/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1F0763	06/11/2021	TML

Notes and Definitions

C-34	The sample was reanalyzed outside of the required 48-hour hold time by 123 hours. The original dilutions were not appropriate for this sample.
C-37	The dissolved oxygen depletion for the dilution water blank was greater than 0.20mg/L at 0.32mg/L.
C-51	The alkalinity to pH 4.2 = 19.6 mg CaCO3/L.
G-11	The sample was filtered after it was received at the laboratory.
G-17	The sample was preserved in the laboratory.
J	Estimated value
Q-10	The matrix spike(s) were outside acceptable limits of 90-110% recovery at 84.5%.
U	Analyte was not detected above the indicated value.

M.J. Reider Associates, Inc.
107 Angelica St, Reading PA, 19611
610-374-5129 www.mjreider.com

WORK ORDER
Chain of Custody

2116074

Client Code: 3157
Client: Tetra Tech
Project Manager: Richard A Wheeler
Project: 2021 - Prompton Reservoir
Report To: Tetra Tech - David Wertz - USACE, Phila Dist. Env.Resources Branch 100 Penn Square E., Arlington, VA 22201
Invoice To: Tetra Tech - David Wertz - USACE, Phila Dist. Env.Resources Branch 100 Penn Square E., Arlington, VA 22201

Comments:

Collected By : (Full Name) Gregory Wacik

2116074-01 PR-1S

Matrix: Non-Potable Water
Type: Grab
Date: 6/8/21
Time: 0800

BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B
Alk SM 2320B, NH3-N D6919-03, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

2116074-02 PR-2S

Matrix: Non-Potable Water
Type: Grab
Date: 6/8/21
Time: 1000

BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B
Alk SM 2320B, NH3-N D6919-03, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

	Date/Time		Date/Time
Relinquished By	6/8/21 1245	Received By	6-8-21 1246
Relinquished By		Received By	
Relinquished By		Received at Laboratory By	6-8-21 1350

Sample Kit Prepared By:	Date/Time
CML	5/7

Sample Temp (°C): 4
Samples on Ice? (Yes) No NA
Approved By: RSW
Entered By:

Printed: 5/7/2021 8:29:10AM

Report Template: wko WorkOrder COC is

M.J. Reider Associates, Inc.

2116074

Client Code: 3157 **Client:** Tetra Tech

Project Manager: Richard A Wheeler **Project:** 2021 - Prompton Reservoir

Comments:

Collected By : (Full Name) Gregory Wacik

2116074-03 PR-2M

NO2-N EPA 300.0, NO3-N EPA 300.0, BOD SM 5210B, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F

Alk SM 2320B, NH3-N D6919-03, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water Date: 6/8/21
Type: Grab Time: 1000

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2116074-04 PR-2D

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F

Alk SM 2320B, NH3-N D6919-03, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water Date: 6/8/21
Type: Grab Time: 1000

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2116074-05 PR-3S

BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B

Alk SM 2320B, NH3-N D6919-03, PO4 SM 4500P-F, TOC SM 5310C, TSS SM 2540D, TDS SM 2540C, TKN EPA 351.2

Matrix: Non-Potable Water Date: 6/8/21
Type: Grab Time: 0915

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By	6/8/21 1245 Date/Time	Received By	6-8-21 1246 Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received at Laboratory By	6-8-21 1350 Date/Time

Sample Kit Prepared By:	Date/Time
CML	5/7
Sample Temp (°C):	4
Samples on Ice?	Yes No NA
Approved By:	
Entered By:	

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

Printed: 5/7/2021 8:29:10AM

Report Template: wko WorkOrder COC ls

M.J. Reider Associates, Inc.

2116074

Client Code: 3157 **Client:** Tetra Tech

Project Manager: Richard A Wheeler **Project:** 2021 - Prompton Reservoir

Comments:

Collected By : (Full Name) Gregory Wacik

2116074-06 PR-3M

BOD SM 5210B, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, NO2-N EPA 300.0, NO3-N EPA 300.0

Alk SM 2320B, PO4 SM 4500P-F, TDS SM 2540C, NH3-N D6919-03, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water Date: 6/8/21
Type: Grab Time: 0915

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2116074-07 PR-3D

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F

NH3-N D6919-03, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D, Alk SM 2320B, PO4 SM 4500P-F, TDS SM 2540C

Matrix: Non-Potable Water Date: 6/8/21
Type: Grab Time: 0915

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2116074-08 PR-4S

NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B, BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0

Alk SM 2320B, PO4 SM 4500P-F, NH3-N D6919-03, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water Date: 6/8/21
Type: Grab Time: 0830

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By	Date/Time 6/8/21 1245	Received By	Date/Time 6-8-21 1246
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received at Laboratory By	Date/Time 6-8-21 1350

Sample Kit Prepared By: CML	Date/Time 5|7
Sample Temp (°C): 4	
Samples on Ice? (Yes) No NA	
Approved By: BSW	
Entered By:	

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

Printed: 5/7/2021 8:29:10AM

Report Template: Wko WorkOrder COC Js

MJRA Terms & Conditions

All samples submitted must be accompanied by signed documentation representing a Chain of Custody (COC). The COC Record acts as a contract between the client and MJRA. Signing the COC form gives approval for MJRA to perform the requested analyses and is an agreement to pay for the cost of such analyses**.** COC Records must be completed in black or blue indelible ink (must not run when wet). COC documentation begins at the time of sample collection. Client is required to document all sample details prior to releasing samples to MJRA. All samples must be placed on ice immediately after sampling and shipped or delivered to the laboratory in a manner that will maintain the sample temperature above freezing and below 6C (loose ice is preferred)**.**

Sample Submission, Sample Acceptance & Sampling Containers

Included on the COC must be the sample description, date and time of collection (including start and stop for composites), container size and type, preservative information, sample matrix, indication of whether the sample is a grab or composite, number of containers & a list of the tests to be performed. Poor sample collection technique, inappropriate sampling containers and/or improper sample preservation may lead to sample rejection. Suitable sample containers, labels, and preservatives (as applicable), along with blank COCs are provided at no additional cost.

Turnaround Times (TAT)

Average TAT for test results range from 5 to 15 working days depending on the specific analyses and time of year submitted. Faster turnaround times (*RUSH TAT) may be available depending on the current workload in a particular department and the nature of the analyses requested. We encourage you to verify requests for expedited sample results with one of our Technical Directors prior to sample submittal. Without confirmation from a Technical Director, your results may not be completed by your deadline. *RUSH TAT Surcharges are applied for expedited turnaround times.

Analytical Results, Sample Collection Integrity & Subcontracting

Analytical values are for the sample as submitted and relate only to the item tested. The value indicates a snapshot of the constituent content of the sample at the time of sample collection. Analytical results can be impacted by poor sample collection technique and/or improper preservation. All sample collection completed by MJRA was performed in accordance with applicable regulatory protocols or as specified in customer specific sampling plans. Constituent content will vary over time based on the matrix of the sample and the physical and chemical changes to its environment. All sample results and laboratory reports are strictly confidential. Results will not be available to anyone except the primary client or authorized party representing the client unless MJRA receives additional permissions from the client. When necessary, MJRA will subcontract certain analyses to a third party accredited laboratory. If client prohibits subcontracting, it must be provided in writing and include instruction on how to proceed with client samples that require third party analyses.

Payment Terms

Payment Terms are Net 30 days. Prices are subject to change without notice. A standing monthly charge of 1.5% of the clients over-30-day-unpaid balance may be added to the balance after 30 days and each month thereafter (day 31, 61, 91 etc.). The laboratory accepts all major credit cards, ACH transactions, checks and cash. New clients must pay for all services rendered prior to sample collection and/or in some cases report processing. Clients must contact the MJRA accounting department to pursue a credit-based account. MJRA reserves the right to terminate the client's credit account and to refuse to perform additional services on a credit basis if any balance is outstanding for more than 60 days.

Warranty & Litigation

MJRA does not guarantee any results of its services but has agreed to use its best efforts, in accordance with the standards and practices of the industry, to cause such results to be accurate and complete. We disclaim any other warranties, expressed or implied, including a warranty of fitness for a particular purpose and warranty of merchantability. Clients agree that they shall reimburse MJRA for any and all fees, cost and litigation expenses, including reasonable attorney fees incurred by MJRA in obtaining payment for the services rendered. All costs associated with compliance with any subpoena for documents, testimony, or any other purpose relating to work performed by MJRA, for a client, shall be paid by that client. MJRA's aggregate liability for negligent acts and omissions and of an intentional breach by MJRA will not exceed the fee paid for the services. Client agrees to indemnify and hold MJRA harmless for any and all liabilities in excess of said amount. Neither MJRA nor the client shall be liable to the other for special, incidental consequential or punitive liability or damages included but not limited to those arising from delay, loss of use, loss of profits or revenues. MJRA will not be liable to the client unless the client has notified MJRA of the discovery of the alleged negligent act, error, omissions or breach within 30 days of the day of its discovery and within one year of the date of invoice.

Reviewed and Approved by:

Richard A Wheeler
Director of Field Services

NELAP accredited by PA. (PADEP #06-00003) Visit our website to view our current
NELAC accreditations for various drinking water, wastewater and solid & chemical materials analytes.
Additional accreditations by MD (261), NY(12094)

Certificate of Analysis

M.J. Reider Associates, Inc.
ENVIRONMENTAL TESTING LABORATORY
U.S. EPA/PA DEP #06-00003

Laboratory No.: 2119109
Report: 07/07/21
Lab Contact: Richard A Wheeler

Attention: David Wertz
Reported To: Tetra Tech
USACE, Phila Dist. Env.Resources Branch 100 Penn Square E.
Arlington, VA 22201

Project: 2021 - Prompton Reservoir

Lab ID: 2119109-01 **Collected By:** Client **Sampled:** 06/29/21 08:45 **Received:** 06/29/21 14:00
Sample Desc: PR-1S **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l		0.01	SM 4500-P F	07/03/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	28	mg CaCO3/L		2	SM 2320 B	07/01/21		MPB
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	06/30/21	U	RCE
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	06/29/21 16:30	C-37a	SWA
Nitrate as N	0.45	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	06/29/21 15:32	J	TML
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/29/21 15:32	U	TML
Nitrate+Nitrite as N	<0.46	mg/l	0.108	1.10	CALCULATED	06/29/21 15:32		TML
Nitrogen, Total Kjeldahl (TKN)	<0.48	mg/l	0.48	0.50	EPA 351.2	06/30/21	U	SNF
Phosphorus as P, Total	0.03	mg/l	0.01	0.01	SM 4500-P F	07/02/21		TML
Solids, Total Dissolved	64	mg/l	4	5	SM 2540 C	06/30/21		TMH
Total Organic Carbon	2.7	mg/l	0.3	0.5	SM 5310 C	06/30/21		ALD
Solids, Total Suspended	1	mg/l	1	1	SM 2540 D	06/30/21		ALD

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	260	mpn/100ml	1	SM 9223 B/Quantitray	6/29/21 15:03	6/30/21 9:03		DRW
Total Coliform	>2420	mpn/100ml	1	SM 9223 B/Quantitray	6/29/21 15:03	6/30/21 9:03		DRW

Lab ID: 2119109-02 **Collected By:** Client **Sampled:** 06/29/21 09:50 **Received:** 06/29/21 14:00
Sample Desc: PR-2S **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l		0.01	SM 4500-P F	07/03/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	27	mg CaCO3/L		2	SM 2320 B	07/01/21		MPB
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	06/30/21	U	RCE
Biochemical Oxygen Demand	5.1	mg/l	2.0	2.0	SM 5210 B	06/30/21 12:12	C-37	ORS
Nitrate as N	<0.10	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	06/29/21 15:48	U	TML
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/29/21 15:48	U	TML
Nitrate+Nitrite as N	<0.11	mg/l	0.108	1.10	CALCULATED	06/29/21 15:48		TML
Nitrogen, Total Kjeldahl (TKN)	<0.48	mg/l	0.48	0.50	EPA 351.2	06/30/21	U	SNF
Phosphorus as P, Total	0.01	mg/l	0.01	0.01	SM 4500-P F	07/02/21		TML
Solids, Total Dissolved	55	mg/l	4	5	SM 2540 C	06/30/21		TMH
Total Organic Carbon	4.0	mg/l	0.3	0.5	SM 5310 C	06/30/21		ALD
Solids, Total Suspended	8	mg/l	1	1	SM 2540 D	06/30/21		ALD

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	<1	mpn/100ml	1	SM 9223 B/Quantitray	6/29/21 15:03	6/30/21 9:03		DRW
Total Coliform	326	mpn/100ml	1	SM 9223 B/Quantitray	6/29/21 15:03	6/30/21 9:03		DRW

Lab ID: 2119109-03 **Collected By:** Client **Sampled:** 06/29/21 09:50 **Received:** 06/29/21 14:00
Sample Desc: PR-2M **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l		0.01	SM 4500-P F	07/03/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	24	mg CaCO3/L		2	SM 2320 B	07/01/21		MPB
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	06/30/21	U	RCE
Biochemical Oxygen Demand	3.3	mg/l	2.0	2.0	SM 5210 B	06/30/21 12:12	C-37	ORS
Nitrate as N	<0.10	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	06/29/21 16:05	U	TML
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/29/21 16:05	U	TML
Nitrate+Nitrite as N	<0.11	mg/l	0.108	1.10	CALCULATED	06/29/21 16:05		TML
Nitrogen, Total Kjeldahl (TKN)	<0.48	mg/l	0.48	0.50	EPA 351.2	06/30/21	U	SNF
Phosphorus as P, Total	0.01	mg/l	0.01	0.01	SM 4500-P F	07/02/21		TML
Solids, Total Dissolved	59	mg/l	4	5	SM 2540 C	06/30/21		TMH
Total Organic Carbon	3.8	mg/l	0.3	0.5	SM 5310 C	06/30/21		ALD
Solids, Total Suspended	3	mg/l	1	1	SM 2540 D	06/30/21		ALD

Lab ID: 2119109-04 **Collected By:** Client **Sampled:** 06/29/21 09:50 **Received:** 06/29/21 14:00
Sample Desc: PR-2D **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	07/03/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	27	mg CaCO3/L		2	SM 2320 B	07/01/21		MPB
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	06/30/21	U	RCE
Biochemical Oxygen Demand	3.5	mg/l	2.0	2.0	SM 5210 B	06/29/21 16:30	C-37a	SWA
Nitrate as N	0.14	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	06/29/21 16:22	J	TML
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/29/21 16:22	U	TML
Nitrate+Nitrite as N	<0.15	mg/l	0.108	1.10	CALCULATED	06/29/21 16:22		TML
Nitrogen, Total Kjeldahl (TKN)	<0.48	mg/l	0.48	0.50	EPA 351.2	06/30/21	U	SNF
Phosphorus as P, Total	0.04	mg/l	0.01	0.01	SM 4500-P F	07/02/21		TML
Solids, Total Dissolved	75	mg/l	4	5	SM 2540 C	06/30/21		TMH
Total Organic Carbon	3.8	mg/l	0.3	0.5	SM 5310 C	06/30/21		ALD
Solids, Total Suspended	34	mg/l	1	1	SM 2540 D	06/30/21		ALD

Lab ID: 2119109-05 **Collected By:** Client **Sampled:** 06/29/21 09:05 **Received:** 06/29/21 14:00
Sample Desc: PR-3S **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	07/03/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	26	mg CaCO3/L		2	SM 2320 B	07/01/21		MPB
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	06/30/21	U	RCE
Biochemical Oxygen Demand	4.7	mg/l	2.0	2.0	SM 5210 B	06/30/21 12:12	C-37	ORS
Nitrate as N	<0.10	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	06/29/21 16:39	U	TML
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/29/21 16:39	U	TML
Nitrate+Nitrite as N	<0.11	mg/l	0.108	1.10	CALCULATED	06/29/21 16:39		TML
Nitrogen, Total Kjeldahl (TKN)	<0.48	mg/l	0.48	0.50	EPA 351.2	06/30/21	U	SNF
Phosphorus as P, Total	0.01	mg/l	0.01	0.01	SM 4500-P F	07/02/21		TML
Solids, Total Dissolved	63	mg/l	4	5	SM 2540 C	06/30/21		TMH
Total Organic Carbon	4.0	mg/l	0.3	0.5	SM 5310 C	06/30/21		ALD
Solids, Total Suspended	4	mg/l	1	1	SM 2540 D	06/30/21		ALD

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	<1	mpn/100ml	1	SM 9223 B/Quantitray	6/29/21 15:03	6/30/21 9:03		DRW
Total Coliform	517	mpn/100ml	1	SM 9223 B/Quantitray	6/29/21 15:03	6/30/21 9:03		DRW

Lab ID: 2119109-06 **Collected By:** Client **Sampled:** 06/29/21 09:05 **Received:** 06/29/21 14:00
Sample Desc: PR-3M **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	07/03/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	24	mg CaCO3/L		2	SM 2320 B	07/01/21		MPB
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	06/30/21	U	RCE
Biochemical Oxygen Demand	2.4	mg/l	2.0	2.0	SM 5210 B	06/29/21 16:30	C-37a	SWA
Nitrate as N	0.13	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	06/29/21 17:30	J	TML
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/29/21 17:30	U	TML
Nitrate+Nitrite as N	<0.14	mg/l	0.108	1.10	CALCULATED	06/29/21 17:30		TML
Nitrogen, Total Kjeldahl (TKN)	<0.48	mg/l	0.48	0.50	EPA 351.2	06/30/21	U	SNF
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	07/02/21		TML
Solids, Total Dissolved	64	mg/l	4	5	SM 2540 C	06/30/21		TMH
Total Organic Carbon	3.8	mg/l	0.3	0.5	SM 5310 C	06/30/21		ALD
Solids, Total Suspended	4	mg/l	1	1	SM 2540 D	06/30/21		ALD

Lab ID: 2119109-07 **Collected By:** Client **Sampled:** 06/29/21 09:05 **Received:** 06/29/21 14:00
Sample Desc: PR-3D **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	07/03/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	30	mg CaCO3/L		2	SM 2320 B	07/01/21		MPB
Ammonia as N	0.21	mg/l	0.05	0.10	ASTM D6919-03	06/30/21		RCE
Biochemical Oxygen Demand	6.3	mg/l	2.0	2.0	SM 5210 B	06/29/21 17:10		SWA
Nitrate as N	<0.10	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	06/29/21 17:46	U	TML
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/29/21 17:46	U	TML
Nitrate+Nitrite as N	<0.11	mg/l	0.108	1.10	CALCULATED	06/29/21 17:46		TML
Nitrogen, Total Kjeldahl (TKN)	<0.48	mg/l	0.48	0.50	EPA 351.2	06/30/21	U	SNF
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	07/02/21		TML
Solids, Total Dissolved	61	mg/l	4	5	SM 2540 C	06/30/21		TMH
Total Organic Carbon	4.2	mg/l	0.3	0.5	SM 5310 C	06/30/21		ALD
Solids, Total Suspended	3	mg/l	1	1	SM 2540 D	06/30/21		ALD

Lab ID: 2119109-08 **Collected By:** Client **Sampled:** 06/29/21 08:15 **Received:** 06/29/21 14:00
Sample Desc: PR-4S **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	<0.01	mg/l		0.01	SM 4500-P F	07/03/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	27	mg CaCO3/L		2	SM 2320 B	07/01/21		MPB
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	06/30/21	U	RCE
Biochemical Oxygen Demand	2.6	mg/l	2.0	2.0	SM 5210 B	06/29/21 17:10		SWA
Nitrate as N	0.24	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	06/29/21 18:03	J	TML
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	06/29/21 18:03	U	TML
Nitrate+Nitrite as N	<0.25	mg/l	0.108	1.10	CALCULATED	06/29/21 18:03		TML
Nitrogen, Total Kjeldahl (TKN)	<0.48	mg/l	0.48	0.50	EPA 351.2	06/30/21	U	SNF
Phosphorus as P, Total	<0.01	mg/l	0.01	0.01	SM 4500-P F	07/02/21		TML
Solids, Total Dissolved	68	mg/l	4	5	SM 2540 C	06/30/21		TMH
Total Organic Carbon	3.6	mg/l	0.3	0.5	SM 5310 C	06/30/21		ALD
Solids, Total Suspended	<1	mg/l	1	1	SM 2540 D	06/30/21		ALD

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	14	mpn/100ml	1	SM 9223 B/Quantitray	6/29/21 15:03	6/30/21 9:03		DRW
Total Coliform	1730	mpn/100ml	1	SM 9223 B/Quantitray	6/29/21 15:03	6/30/21 9:03		DRW

Preparation Methods

Specific Method	Preparation Method	Prep Batch	Prepared Date	Prepared By
2119109-01				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1G0015	07/01/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1G0044	07/01/2021	TML
2119109-02				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1G0015	07/01/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1G0044	07/01/2021	TML
2119109-03				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1G0015	07/01/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1G0044	07/01/2021	TML
2119109-04				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1G0015	07/01/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1G0044	07/01/2021	TML
2119109-05				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1G0015	07/01/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1G0044	07/01/2021	TML
2119109-06				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1G0015	07/01/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1G0044	07/01/2021	TML
2119109-07				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1G0015	07/01/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1G0044	07/01/2021	TML
2119109-08				
Dissolved General Chemistry				

SM 4500-P F	SM 4500-P B	B1G0015	07/01/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1G0044	07/01/2021	TML

Notes and Definitions

C-37	The dissolved oxygen depletion for the dilution water blank was greater than 0.20mg/L at 0.47mg/L.
C-37a	The dissolved oxygen depletion for the dilution water blank was greater than 0.20mg/L at 0.68mg/L.
G-11	The sample was filtered after it was received at the laboratory.
G-17	The sample was preserved in the laboratory.
J	Estimated value
U	Analyte was not detected above the indicated value.

M.J. Reider Associates, Inc.
107 Angelica St, Reading PA, 19611
610-374-5129 www.mjreider.com

WORK ORDER
Chain of Custody

2119109

Client Code: 3157
Client: Tetra Tech
Project Manager: Richard A Wheeler
Project: 2021 - Prompton Reservoir
Report To: Tetra Tech - David Wertz - USACE, Phila Dist. Env.Resources Branch 100 Penn Square E., Arlington, VA 22201
Invoice To: Tetra Tech - David Wertz - USACE, Phila Dist. Env.Resources Branch 100 Penn Square E., Arlington, VA 22201

Collected By : (Full Name) Gregory Wacik

Comments:

2119109-01 PR-1S

Matrix: Non-Potable Water
Type: Grab
Date: 6/29/21
Time: 0845

BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4 D SM 4500P-F, TC (#) SM 9223B
Alk SM 2320B, NH3-N D6919-03, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

2119109-02 PR-2S

Matrix: Non-Potable Water
Type: Grab
Date: 6/29/21
Time: 0950

BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4 D SM 4500P-F, TC (#) SM 9223B
Alk SM 2320B, NH3-N D6919-03, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By	Date/Time: 6/29/21 1230	Received By	Date/Time: 6-29-21 1240
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received at Laboratory By	Date/Time: 62921 1405

Sample Kit Prepared By:	Date/Time
Sample Temp (°C): 8	
Samples on Ice? Yes No NA	
Approved By:	
Entered By:	

Printed: 6/1/2021 11:01:38AM

Report Template: wko WorkOrder COC 1s

M.J. Reider Associates, Inc.

2119109

Client Code: 3157 **Client:** Tetra Tech

Project Manager: Richard A Wheeler **Project:** 2021 - Prompton Reservoir

Comments:

Collected By : (Full Name) Gregory Wacik

2119109-03 PR-2M

PO4-D SM 4500P-F, NO2-N EPA 300.0, NO3-N EPA 300.0, BOD SM 5210B, NO2-N, NO3-N, Combined NO3+NO2
Alk SM 2320B, NH3-N D6919-03, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water Date: 6/29/21
Type: Grab Time: 0950

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2119109-04 PR-2D

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F
Alk SM 2320B, NH3-N D6919-03, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water Date: 6/29/21
Type: Grab Time: 0950

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2119109-05 PR-3S

BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, PO4-D SM 4500P-F, TC (#) SM 9223B, NO2-N, NO3-N, Combined NO3+NO2
Alk SM 2320B, NH3-N D6919-03, TDS SM 2540C, TKN EPA 351.2, PO4 SM 4500P-F, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water Date: 6/29/21
Type: Grab Time: 0905

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By	Date/Time 6/29/21 1230	Received By	Date/Time 6-29-21 1240
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received at Laboratory By	Date/Time 6-29-21 1400

Sample Kit Prepared By:	Date/Time
Sample Temp (°C): 8	
Samples on Ice? Yes No NA	
Approved By:	
Entered By: BSK	

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

Printed: 6/1/2021 11:01:38AM

Report Template: wko WorkOrder COC ls

M.J. Reider Associates, Inc.

2119109

Client Code: 3157 **Client:** Tetra Tech

Project Manager: Richard A Wheeler **Project:** 2021 - Prompton Reservoir

Comments:

Collected By : (Full Name) Gregory Wacik

2119109-06 PR-3M

NO2-N EPA 300.0, NO3-N EPA 300.0, BOD SM 5210B, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F

NH3-N D6919-03, PO4 SM 4500P-F, TOC SM 5310C, TSS SM 2540D, Alk SM 2320B, TDS SM 2540C, TKN EPA 351.2

Matrix: Non-Potable Water
Type: Grab

Date: 6/29/21
Time: 0905

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2119109-07 PR-3D

BOD SM 5210B, PO4-D SM 4500P-F, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2

Alk SM 2320B, NH3-N D6919-03, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water
Type: Grab

Date: 6/29/21
Time: 0905

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2119109-08 PR-4S

EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, BOD SM 5210B, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B

NH3-N D6919-03, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D, Alk SM 2320B, PO4 SM 4500P-F

Matrix: Non-Potable Water
Type: Grab

Date: 6/29/21
Time: 0815

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By	6/29/21 1230 Date/Time	Received By	6-29-21 1240 Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received at Laboratory By	6-29-21 1400 Date/Time

Sample Kit Prepared By:	Date/Time
Sample Temp (°C):	8
Samples on Ice?	Yes No NA
Approved By:	
Entered By:	

Printed: 6/1/2021 11:01:38AM

Report Template: wko WorkOrder COC ls

MJRA Terms & Conditions

All samples submitted must be accompanied by signed documentation representing a Chain of Custody (COC). The COC Record acts as a contract between the client and MJRA. Signing the COC form gives approval for MJRA to perform the requested analyses and is an agreement to pay for the cost of such analyses**.** COC Records must be completed in black or blue indelible ink (must not run when wet). COC documentation begins at the time of sample collection. Client is required to document all sample details prior to releasing samples to MJRA. All samples must be placed on ice immediately after sampling and shipped or delivered to the laboratory in a manner that will maintain the sample temperature above freezing and below 6C (loose ice is preferred)**.**

Sample Submission, Sample Acceptance & Sampling Containers

Included on the COC must be the sample description, date and time of collection (including start and stop for composites), container size and type, preservative information, sample matrix, indication of whether the sample is a grab or composite, number of containers & a list of the tests to be performed. Poor sample collection technique, inappropriate sampling containers and/or improper sample preservation may lead to sample rejection. Suitable sample containers, labels, and preservatives (as applicable), along with blank COCs are provided at no additional cost.

Turnaround Times (TAT)

Average TAT for test results range from 5 to 15 working days depending on the specific analyses and time of year submitted. Faster turnaround times (*RUSH TAT) may be available depending on the current workload in a particular department and the nature of the analyses requested. We encourage you to verify requests for expedited sample results with one of our Technical Directors prior to sample submittal. Without confirmation from a Technical Director, your results may not be completed by your deadline. *RUSH TAT Surcharges are applied for expedited turnaround times.

Analytical Results, Sample Collection Integrity & Subcontracting

Analytical values are for the sample as submitted and relate only to the item tested. The value indicates a snapshot of the constituent content of the sample at the time of sample collection. Analytical results can be impacted by poor sample collection technique and/or improper preservation. All sample collection completed by MJRA was performed in accordance with applicable regulatory protocols or as specified in customer specific sampling plans. Constituent content will vary over time based on the matrix of the sample and the physical and chemical changes to its environment. All sample results and laboratory reports are strictly confidential. Results will not be available to anyone except the primary client or authorized party representing the client unless MJRA receives additional permissions from the client. When necessary, MJRA will subcontract certain analyses to a third party accredited laboratory. If client prohibits subcontracting, it must be provided in writing and include instruction on how to proceed with client samples that require third party analyses.

Payment Terms

Payment Terms are Net 30 days. Prices are subject to change without notice. A standing monthly charge of 1.5% of the clients over-30-day-unpaid balance may be added to the balance after 30 days and each month thereafter (day 31, 61, 91 etc.). The laboratory accepts all major credit cards, ACH transactions, checks and cash. New clients must pay for all services rendered prior to sample collection and/or in some cases report processing. Clients must contact the MJRA accounting department to pursue a credit-based account. MJRA reserves the right to terminate the client's credit account and to refuse to perform additional services on a credit basis if any balance is outstanding for more than 60 days.

Warranty & Litigation

MJRA does not guarantee any results of its services but has agreed to use its best efforts, in accordance with the standards and practices of the industry, to cause such results to be accurate and complete. We disclaim any other warranties, expressed or implied, including a warranty of fitness for a particular purpose and warranty of merchantability. Clients agree that they shall reimburse MJRA for any and all fees, cost and litigation expenses, including reasonable attorney fees incurred by MJRA in obtaining payment for the services rendered. All costs associated with compliance with any subpoena for documents, testimony, or any other purpose relating to work performed by MJRA, for a client, shall be paid by that client. MJRA's aggregate liability for negligent acts and omissions and of an intentional breach by MJRA will not exceed the fee paid for the services. Client agrees to indemnify and hold MJRA harmless for any and all liabilities in excess of said amount. Neither MJRA nor the client shall be liable to the other for special, incidental consequential or punitive liability or damages included but not limited to those arising from delay, loss of use, loss of profits or revenues. MJRA will not be liable to the client unless the client has notified MJRA of the discovery of the alleged negligent act, error, omissions or breach within 30 days of the day of its discovery and within one year of the date of invoice.

Reviewed and Approved by:

Richard A Wheeler
Director of Field Services

Certificate of Analysis

M.J. Reider Associates, Inc.
ENVIRONMENTAL TESTING LABORATORY
U.S. EPA/PA DEP #06-00003

Laboratory No.: 2122141
Report: 07/29/21
Lab Contact: Richard A Wheeler

Attention: David Wertz
Reported To: Tetra Tech
USACE, Phila Dist. Env.Resources Branch 100 Penn Square E.
Arlington, VA 22201

Project: 2021 - Prompton Reservoir

Lab ID: 2122141-01 **Collected By:** Client **Sampled:** 07/20/21 08:45 **Received:** 07/20/21 13:55
Sample Desc: PR-1S **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.06	mg/l		0.01	SM 4500-P F	07/21/21	G-11, G-17	SNF
General Chemistry								
Alkalinity, Total to pH 4.5	23	mg CaCO3/L		2	SM 2320 B	07/22/21		APR
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	07/21/21	U	APR
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	07/21/21 11:58	C-37b	SWA
Nitrate as N	0.33	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	07/21/21 1:32	J	JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/21/21 1:32	U	JAF
Nitrate+Nitrite as N	<0.34	mg/l	0.119	1.10	CALCULATED	07/21/21 1:32		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2	07/26/21	U	TML
Phosphorus as P, Total	0.03	mg/l	0.01	0.01	SM 4500-P F	07/23/21		SNF
Solids, Total Dissolved	78	mg/l	4	5	SM 2540 C	07/21/21		TMH
Total Organic Carbon	5.5	mg/l	0.3	0.5	SM 5310 C	07/21/21		ALD
Solids, Total Suspended	2	mg/l	1	1	SM 2540 D	07/21/21		ALD

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	161	mpn/100ml	1	SM 9223 B/Quantitray	7/20/21 14:59	7/21/21 10:12		DRW
Total Coliform	>2420	mpn/100ml	1	SM 9223 B/Quantitray	7/20/21 14:59	7/21/21 10:12		DRW

Lab ID: 2122141-02 **Collected By:** Client **Sampled:** 07/20/21 10:00 **Received:** 07/20/21 13:55
Sample Desc: PR-2S **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.03	mg/l		0.01	SM 4500-P F	07/21/21	G-11, G-17	SNF
General Chemistry								
Alkalinity, Total to pH 4.5	20	mg CaCO3/L		2	SM 2320 B	07/22/21		APR
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	07/21/21	U	APR
Biochemical Oxygen Demand	2.5	mg/l	2.0	2.0	SM 5210 B	07/21/21 11:58	C-37b	SWA
Nitrate as N	0.17	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	07/20/21 23:18	J	JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/20/21 23:18	U	JAF
Nitrate+Nitrite as N	<0.18	mg/l	0.119	1.10	CALCULATED	07/20/21 23:18		JAF
Nitrogen, Total Kjeldahl (TKN)	0.50	mg/l	0.43	0.50	EPA 351.2	07/26/21		TML
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	07/23/21		SNF
Solids, Total Dissolved	84	mg/l	4	5	SM 2540 C	07/21/21		TMH
Total Organic Carbon	6.5	mg/l	0.3	0.5	SM 5310 C	07/21/21		ALD
Solids, Total Suspended	2	mg/l	1	1	SM 2540 D	07/21/21		ALD

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	104	mpn/100ml	1	SM 9223 B/Quantitray	7/20/21 14:59	7/21/21 10:12		DRW
Total Coliform	>2420	mpn/100ml	1	SM 9223 B/Quantitray	7/20/21 14:59	7/21/21 10:12		DRW

Lab ID: 2122141-03 **Collected By:** Client **Sampled:** 07/20/21 10:00 **Received:** 07/20/21 13:55
Sample Desc: PR-2M **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.03	mg/l		0.01	SM 4500-P F	07/21/21	G-11, G-17	SNF
General Chemistry								
Alkalinity, Total to pH 4.5	20	mg CaCO3/L		2	SM 2320 B	07/22/21		APR
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	07/21/21	U	APR
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	07/21/21 11:58	C-37b	SWA
Nitrate as N	0.25	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	07/21/21 0:59	J	JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/21/21 0:59	U	JAF
Nitrate+Nitrite as N	<0.26	mg/l	0.119	1.10	CALCULATED	07/21/21 0:59		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2	07/26/21	U	TML
Phosphorus as P, Total	0.03	mg/l	0.01	0.01	SM 4500-P F	07/23/21		SNF
Solids, Total Dissolved	52	mg/l	4	5	SM 2540 C	07/21/21		TMH
Total Organic Carbon	6.1	mg/l	0.3	0.5	SM 5310 C	07/21/21		ALD
Solids, Total Suspended	1	mg/l	1	1	SM 2540 D	07/21/21		ALD

Lab ID: 2122141-04 **Collected By:** Client **Sampled:** 07/20/21 10:00 **Received:** 07/20/21 13:55
Sample Desc: PR-2D **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.04	mg/l		0.01	SM 4500-P F	07/21/21	G-11, G-17	SNF
General Chemistry								
Alkalinity, Total to pH 4.5	21	mg CaCO3/L		2	SM 2320 B	07/22/21		APR
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	07/21/21	U	APR
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	07/21/21 11:58	C-37b	SWA
Nitrate as N	0.26	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	07/20/21 23:34	J	JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/20/21 23:34	U	JAF
Nitrate+Nitrite as N	<0.27	mg/l	0.119	1.10	CALCULATED	07/20/21 23:34		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2	07/26/21	U	TML
Phosphorus as P, Total	0.03	mg/l	0.01	0.01	SM 4500-P F	07/23/21		SNF
Solids, Total Dissolved	62	mg/l	4	5	SM 2540 C	07/21/21		TMH
Total Organic Carbon	6.1	mg/l	0.3	0.5	SM 5310 C	07/21/21		ALD
Solids, Total Suspended	<1	mg/l	1	1	SM 2540 D	07/21/21		ALD

Lab ID: 2122141-05 **Collected By:** Client **Sampled:** 07/20/21 09:15 **Received:** 07/20/21 13:55
Sample Desc: PR-3S **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.02	mg/l		0.01	SM 4500-P F	07/21/21	G-11, G-17	SNF
General Chemistry								
Alkalinity, Total to pH 4.5	19	mg CaCO3/L		2	SM 2320 B	07/22/21	C-51	APR
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	07/21/21	U	APR
Biochemical Oxygen Demand	2.9	mg/l	2.0	2.0	SM 5210 B	07/21/21 13:10	C-37a	SWA
Nitrate as N	<0.10	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	07/21/21 1:15	U	JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/21/21 1:15	U	JAF
Nitrate+Nitrite as N	<0.11	mg/l	0.119	1.10	CALCULATED	07/21/21 1:15		JAF
Nitrogen, Total Kjeldahl (TKN)	0.59	mg/l	0.43	0.50	EPA 351.2	07/26/21		TML
Phosphorus as P, Total	0.01	mg/l	0.01	0.01	SM 4500-P F	07/23/21		SNF
Solids, Total Dissolved	51	mg/l	4	5	SM 2540 C	07/21/21		TMH
Total Organic Carbon	6.3	mg/l	0.3	0.5	SM 5310 C	07/21/21		ALD
Solids, Total Suspended	1	mg/l	1	1	SM 2540 D	07/21/21		ALD

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	61	mpn/100ml	1	SM 9223 B/Quantitray	7/20/21 14:59	7/21/21 10:12		DRW
Total Coliform	>2420	mpn/100ml	1	SM 9223 B/Quantitray	7/20/21 14:59	7/21/21 10:12		DRW

Lab ID: 2122141-06 **Collected By:** Client **Sampled:** 07/20/21 09:15 **Received:** 07/20/21 13:55
Sample Desc: PR-3M **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.02	mg/l		0.01	SM 4500-P F	07/21/21	G-11, G-17	SNF
General Chemistry								
Alkalinity, Total to pH 4.5	20	mg CaCO3/L		2	SM 2320 B	07/22/21		APR
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	07/21/21	U	APR
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	07/21/21 11:58	C-37b	SWA
Nitrate as N	0.23	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	07/21/21 0:08	J	JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/21/21 0:08	U	JAF
Nitrate+Nitrite as N	<0.24	mg/l	0.119	1.10	CALCULATED	07/21/21 0:08		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2	07/26/21	U	TML
Phosphorus as P, Total	0.01	mg/l	0.01	0.01	SM 4500-P F	07/23/21		SNF
Solids, Total Dissolved	78	mg/l	4	5	SM 2540 C	07/21/21		TMH
Total Organic Carbon	6.5	mg/l	0.3	0.5	SM 5310 C	07/21/21		ALD
Solids, Total Suspended	<1	mg/l	1	1	SM 2540 D	07/21/21		ALD

Lab ID: 2122141-07 **Collected By:** Client **Sampled:** 07/20/21 09:15 **Received:** 07/20/21 13:55
Sample Desc: PR-3D **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.04	mg/l		0.01	SM 4500-P F	07/21/21	G-11, G-17	SNF
General Chemistry								
Alkalinity, Total to pH 4.5	25	mg CaCO3/L		2	SM 2320 B	07/22/21		APR
Ammonia as N	0.17	mg/l	0.05	0.10	ASTM D6919-03	07/21/21		APR
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	07/20/21 16:42	C-37	SWA
Nitrate as N	0.20	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	07/20/21 23:51	J	JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/20/21 23:51	U	JAF
Nitrate+Nitrite as N	<0.21	mg/l	0.119	1.10	CALCULATED	07/20/21 23:51		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2	07/26/21	U	TML
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	07/23/21		SNF
Solids, Total Dissolved	63	mg/l	4	5	SM 2540 C	07/21/21		TMH
Total Organic Carbon	6.6	mg/l	0.3	0.5	SM 5310 C	07/21/21		ALD
Solids, Total Suspended	2	mg/l	1	1	SM 2540 D	07/21/21		ALD

Lab ID: 2122141-08 **Collected By:** Client **Sampled:** 07/20/21 08:15 **Received:** 07/20/21 13:55
Sample Desc: PR-4S **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.03	mg/l		0.01	SM 4500-P F	07/21/21	G-11, G-17	SNF
General Chemistry								
Alkalinity, Total to pH 4.5	21	mg CaCO3/L		2	SM 2320 B	07/22/21		APR
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	07/21/21	U	APR
Biochemical Oxygen Demand	2.6	mg/l	2.0	2.0	SM 5210 B	07/20/21 16:42	C-37	SWA
Nitrate as N	0.20	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	07/21/21 2:23	J	JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	07/21/21 2:23	U	JAF
Nitrate+Nitrite as N	<0.21	mg/l	0.119	1.10	CALCULATED	07/21/21 2:23		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2	07/26/21	Q-10, U	TML
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	07/23/21		SNF
Solids, Total Dissolved	62	mg/l	4	5	SM 2540 C	07/21/21		TMH
Total Organic Carbon	6.4	mg/l	0.3	0.5	SM 5310 C	07/21/21		ALD
Solids, Total Suspended	<1	mg/l	1	1	SM 2540 D	07/21/21		ALD

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	80	mpn/100ml	1	SM 9223 B/Quantitray	7/20/21 14:59	7/21/21 10:12		DRW
Total Coliform	>2420	mpn/100ml	1	SM 9223 B/Quantitray	7/20/21 14:59	7/21/21 10:12		DRW

Preparation Methods

Specific Method	Preparation Method	Prep Batch	Prepared Date	Prepared By
2122141-01				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1G1024	07/20/2021	SNF
General Chemistry				
SM 4500-P F	SM 4500-P B	B1G1225	07/22/2021	SNF
2122141-02				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1G1024	07/20/2021	SNF
General Chemistry				
SM 4500-P F	SM 4500-P B	B1G1225	07/22/2021	SNF
2122141-03				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1G1024	07/20/2021	SNF
General Chemistry				
SM 4500-P F	SM 4500-P B	B1G1225	07/22/2021	SNF
2122141-04				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1G1024	07/20/2021	SNF
General Chemistry				
SM 4500-P F	SM 4500-P B	B1G1225	07/22/2021	SNF
2122141-05				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1G1024	07/20/2021	SNF
General Chemistry				
SM 4500-P F	SM 4500-P B	B1G1225	07/22/2021	SNF
2122141-06				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1G1024	07/20/2021	SNF
General Chemistry				
SM 4500-P F	SM 4500-P B	B1G1225	07/22/2021	SNF
2122141-07				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1G1024	07/20/2021	SNF
General Chemistry				
SM 4500-P F	SM 4500-P B	B1G1225	07/22/2021	SNF
2122141-08				
Dissolved General Chemistry				

SM 4500-P F	SM 4500-P B	B1G1024	07/20/2021	SNF
General Chemistry				
SM 4500-P F	SM 4500-P B	B1G1225	07/22/2021	SNF

Notes and Definitions

C-37	The dissolved oxygen depletion for the dilution water blank was greater than 0.20mg/L at 0.58mg/L.
C-37a	The dissolved oxygen depletion for the dilution water blank was greater than 0.20mg/L at 0.66mg/L.
C-37b	The dissolved oxygen depletion for the dilution water blank was greater than 0.20mg/L at 0.76mg/L.
C-51	The alkalinity to pH 4.2 = 18.9 mg CaCO3/L.
G-11	The sample was filtered after it was received at the laboratory.
G-17	The sample was preserved in the laboratory.
J	Estimated value
Q-10	The matrix spike(s) were outside acceptable limits of 90-110% recovery at 110.3%.
U	Analyte was not detected above the indicated value.

M.J. Reider Associates, Inc.
107 Angelica St, Reading PA, 19611
610-374-5129 www.mjreider.com

WORK ORDER
Chain of Custody

2122141

Client Code: 3157 **Client:** Tetra Tech
Project Manager: Richard A Wheeler **Project:** 2021 - Prompton Reservoir
Report To: Tetra Tech - David Wertz - USACE, Phila Dist. Env.Resources Branch 100 Penn Square E., Arlington, VA 22201
Invoice To: Tetra Tech - David Wertz - USACE, Phila Dist. Env.Resources Branch 100 Penn Square E., Arlington, VA 22201

Collected By : (Full Name) Gregory Wacik

Comments:

2122141-01 PR-1S

BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B
Alk SM 2320B, NH3-N D6919-03, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water Date: 7/20/21
Type: Grab Time: 0845

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

2122141-02 PR-2S

BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B
Alk SM 2320B, NH3-N D6919-03, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water Date: 7/20/21
Type: Grab Time: 1000

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By	Date/Time 7/20/21 1230	Received By	Date/Time 7-20-21 1240
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received at Laboratory By	Date/Time 7-20-21 1355

Sample Kit Prepared By: JSV @	Date/Time 6/23/21
Sample Temp (°C):	8
Samples on Ice?	Yes No NA
Approved By:	BSW
Entered By:	

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

Printed: 6/22/2021 1:37:43PM

Report Template: wko WorkOrder COC ls

M.J. Reider Associates, Inc.

2122141

Client Code: 3157 **Client:** Tetra Tech

Project Manager: Richard A Wheeler **Project:** 2021 - Prompton Reservoir

Comments:

Collected By : (Full Name) Gregory Wacik

2122141-03 PR-2M

NO2-N EPA 300.0, NO3-N EPA 300.0, BOD SM 5210B, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F

Alk SM 2320B, NH3-N D6919-03, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water Date: 7/20/21
Type: Grab Time: 1000

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2122141-04 PR-2D

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F

Alk SM 2320B, NH3-N D6919-03, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water Date: 7/20/21
Type: Grab Time: 1000

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2122141-05 PR-3S

BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B

Alk SM 2320B, NH3-N D6919-03, TOC SM 5310C, TSS SM 2540D, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2

Matrix: Non-Potable Water Date: 7/20/21
Type: Grab Time: 0915

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By	Date/Time 7/20/21 1230	Received By	Date/Time 7-20-21 1240
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received at Laboratory By	Date/Time 7-20-21 1355

Sample Kit Prepared By: JSV	Date/Time 6/23/21
Sample Temp (°C): 8	
Samples on Ice? Yes No NA	
Approved By:	
Entered By:	

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

Printed: 6/22/2021 1:37:43PM

Report Template: wko WorkOrder COC ls

M.J. Reider Associates, Inc.

2122141

Client Code: 3157 **Client:** Tetra Tech

Project Manager: Richard A Wheeler **Project:** 2021 - Prompton Reservoir

Comments:

Collected By : (Full Name) Gregory Wacik

2122141-06 PR-3M

PO4-D SM 4500P-F, NO2-N EPA 300.0, NO3-N EPA 300.0, BOD SM 5210B, NO2-N, NO3-N, Combined NO3+NO2
TDS SM 2540C, Alk SM 2320B, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D, NH3-N D6919-03, PO4 SM 4500P-F

Matrix: Non-Potable Water Date: 7/20/21
Type: Grab Time: 0915

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2122141-07 PR-3D

BOD SM 5210B, PO4-D SM 4500P-F, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2
Alk SM 2320B, NH3-N D6919-03, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

Matrix: Non-Potable Water Date: 7/20/21
Type: Grab Time: 0915

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2122141-08 PR-4S

EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, BOD SM 5210B, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B
NH3-N D6919-03, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D, Alk SM 2320B, PO4 SM 4500P-F

Matrix: Non-Potable Water Date: 7/20/21
Type: Grab Time: 0815

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By	7/20/21 1230 Date/Time	Received By	7-20-21 1240 Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received at Laboratory By	7-20-21 1355 Date/Time

Sample Kit Prepared By: JSV	Date/Time 6/23/24
Sample Temp (°C): 8	
Samples on Ice? Yes No NA	
Approved By:	
Entered By: BCW	

Printed: 6/22/2021 1:37:43PM

Report Template: wko WorkOrder COC ls

MJRA Terms & Conditions

All samples submitted must be accompanied by signed documentation representing a Chain of Custody (COC). The COC Record acts as a contract between the client and MJRA. Signing the COC form gives approval for MJRA to perform the requested analyses and is an agreement to pay for the cost of such analyses**.** COC Records must be completed in black or blue indelible ink (must not run when wet). COC documentation begins at the time of sample collection. Client is required to document all sample details prior to releasing samples to MJRA. All samples must be placed on ice immediately after sampling and shipped or delivered to the laboratory in a manner that will maintain the sample temperature above freezing and below 6C (loose ice is preferred)**.**

Sample Submission, Sample Acceptance & Sampling Containers

Included on the COC must be the sample description, date and time of collection (including start and stop for composites), container size and type, preservative information, sample matrix, indication of whether the sample is a grab or composite, number of containers & a list of the tests to be performed. Poor sample collection technique, inappropriate sampling containers and/or improper sample preservation may lead to sample rejection. Suitable sample containers, labels, and preservatives (as applicable), along with blank COCs are provided at no additional cost.

Turnaround Times (TAT)

Average TAT for test results range from 5 to 15 working days depending on the specific analyses and time of year submitted. Faster turnaround times (*RUSH TAT) may be available depending on the current workload in a particular department and the nature of the analyses requested. We encourage you to verify requests for expedited sample results with one of our Technical Directors prior to sample submittal. Without confirmation from a Technical Director, your results may not be completed by your deadline. *RUSH TAT Surcharges are applied for expedited turnaround times.

Analytical Results, Sample Collection Integrity & Subcontracting

Analytical values are for the sample as submitted and relate only to the item tested. The value indicates a snapshot of the constituent content of the sample at the time of sample collection. Analytical results can be impacted by poor sample collection technique and/or improper preservation. All sample collection completed by MJRA was performed in accordance with applicable regulatory protocols or as specified in customer specific sampling plans. Constituent content will vary over time based on the matrix of the sample and the physical and chemical changes to its environment. All sample results and laboratory reports are strictly confidential. Results will not be available to anyone except the primary client or authorized party representing the client unless MJRA receives additional permissions from the client. When necessary, MJRA will subcontract certain analyses to a third party accredited laboratory. If client prohibits subcontracting, it must be provided in writing and include instruction on how to proceed with client samples that require third party analyses.

Payment Terms

Payment Terms are Net 30 days. Prices are subject to change without notice. A standing monthly charge of 1.5% of the clients over-30-day-unpaid balance may be added to the balance after 30 days and each month thereafter (day 31, 61, 91 etc.). The laboratory accepts all major credit cards, ACH transactions, checks and cash. New clients must pay for all services rendered prior to sample collection and/or in some cases report processing. Clients must contact the MJRA accounting department to pursue a credit-based account. MJRA reserves the right to terminate the client's credit account and to refuse to perform additional services on a credit basis if any balance is outstanding for more than 60 days.

Warranty & Litigation

MJRA does not guarantee any results of its services but has agreed to use its best efforts, in accordance with the standards and practices of the industry, to cause such results to be accurate and complete. We disclaim any other warranties, expressed or implied, including a warranty of fitness for a particular purpose and warranty of merchantability. Clients agree that they shall reimburse MJRA for any and all fees, cost and litigation expenses, including reasonable attorney fees incurred by MJRA in obtaining payment for the services rendered. All costs associated with compliance with any subpoena for documents, testimony, or any other purpose relating to work performed by MJRA, for a client, shall be paid by that client. MJRA's aggregate liability for negligent acts and omissions and of an intentional breach by MJRA will not exceed the fee paid for the services. Client agrees to indemnify and hold MJRA harmless for any and all liabilities in excess of said amount. Neither MJRA nor the client shall be liable to the other for special, incidental consequential or punitive liability or damages included but not limited to those arising from delay, loss of use, loss of profits or revenues. MJRA will not be liable to the client unless the client has notified MJRA of the discovery of the alleged negligent act, error, omissions or breach within 30 days of the day of its discovery and within one year of the date of invoice.

Reviewed and Approved by:

Richard A Wheeler
Director of Field Services

NELAP accredited by PA. (PADEP #06-00003) Visit our website to view our current
NELAC accreditations for various drinking water, wastewater and solid & chemical materials analytes.
Additional accreditations by MD (261), NY(12094)

Certificate of Analysis

M.J. Reider Associates, Inc.
ENVIRONMENTAL TESTING LABORATORY
U.S. EPA/PA DEP #06-00003

Laboratory No.: 2125188
Report: 08/27/21
Lab Contact: Richard A Wheeler

Attention: David Wertz
Reported To: Tetra Tech
USACE, Phila Dist. Env.Resources Branch 100 Penn Square E.
Arlington, VA 22201

Project: 2021 - Prompton Reservoir

Lab ID: 2125188-01 **Collected By:** Client **Sampled:** 08/17/21 08:40 **Received:** 08/17/21 14:30
Sample Desc: PR-1S **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.03	mg/l		0.01	SM 4500-P F	08/19/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	30	mg CaCO3/L		2	SM 2320 B	08/19/21		APR
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	08/18/21	U	APR
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	08/18/21 11:20		ASD
Nitrate as N	0.30	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	08/17/21 17:56	J	JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/17/21 17:56	U	JAF
Nitrate+Nitrite as N	<0.31	mg/l	0.119	1.10	CALCULATED	08/17/21 17:56		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2	08/23/21	Q-10, U	TML
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	08/18/21		TML
Solids, Total Dissolved	52	mg/l	4	5	SM 2540 C	08/18/21		TMH
Total Organic Carbon	2.3	mg/l	0.3	0.5	SM 5310 C	08/19/21		ALD
Solids, Total Suspended	2	mg/l	1	1	SM 2540 D	08/18/21		ALD

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	214	mpn/100ml	1	SM 9223 B/Quantitray	8/17/21 15:19	8/18/21 10:18		DRW
Total Coliform	>2420	mpn/100ml	1	SM 9223 B/Quantitray	8/17/21 15:19	8/18/21 10:18		DRW

Lab ID: 2125188-02 **Collected By:** Client **Sampled:** 08/17/21 10:05 **Received:** 08/17/21 14:30
Sample Desc: PR-2S **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.04	mg/l		0.01	SM 4500-P F	08/19/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	24	mg CaCO3/L		2	SM 2320 B	08/19/21		APR
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	08/18/21	U	APR
Biochemical Oxygen Demand	7.4	mg/l	2.0	2.0	SM 5210 B	08/18/21 11:20		ASD
Nitrate as N	<0.10	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	08/17/21 18:13	U	JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/17/21 18:13	U	JAF
Nitrate+Nitrite as N	<0.11	mg/l	0.119	1.10	CALCULATED	08/17/21 18:13		JAF
Nitrogen, Total Kjeldahl (TKN)	0.81	mg/l	0.43	0.50	EPA 351.2	08/23/21		TML
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	08/18/21		TML
Solids, Total Dissolved	32	mg/l	4	5	SM 2540 C	08/18/21		TMH
Total Organic Carbon	6.4	mg/l	0.3	0.5	SM 5310 C	08/19/21		ALD
Solids, Total Suspended	11	mg/l	1	1	SM 2540 D	08/18/21		ALD

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	<1	mpn/100ml	1	SM 9223 B/Quantitray	8/17/21 15:19	8/18/21 10:18		DRW
Total Coliform	>2420	mpn/100ml	1	SM 9223 B/Quantitray	8/17/21 15:19	8/18/21 10:18		DRW

Lab ID: 2125188-03 **Collected By:** Client **Sampled:** 08/17/21 10:05 **Received:** 08/17/21 14:30
Sample Desc: PR-2M **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l		0.01	SM 4500-P F	08/19/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	24	mg CaCO3/L		2	SM 2320 B	08/19/21		APR
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	08/18/21	U	APR
Biochemical Oxygen Demand	5.7	mg/l	2.0	2.0	SM 5210 B	08/18/21 11:20		ASD
Nitrate as N	<0.10	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	08/17/21 18:29	U	JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/17/21 18:29	U	JAF
Nitrate+Nitrite as N	<0.11	mg/l	0.119	1.10	CALCULATED	08/17/21 18:29		JAF
Nitrogen, Total Kjeldahl (TKN)	0.74	mg/l	0.43	0.50	EPA 351.2	08/23/21		TML
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	08/18/21		TML
Solids, Total Dissolved	64	mg/l	4	5	SM 2540 C	08/18/21		TMH
Total Organic Carbon	5.4	mg/l	0.3	0.5	SM 5310 C	08/19/21		ALD
Solids, Total Suspended	9	mg/l	1	1	SM 2540 D	08/18/21		ALD

Lab ID: 2125188-04 **Collected By:** Client **Sampled:** 08/17/21 10:05 **Received:** 08/17/21 14:30
Sample Desc: PR-2D **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.02	mg/l		0.01	SM 4500-P F	08/19/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	27	mg CaCO3/L		2	SM 2320 B	08/19/21		APR
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	08/18/21	U	APR
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	08/18/21 11:20		ASD
Nitrate as N	0.17	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	08/17/21 18:46	J	JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/17/21 18:46	U	JAF
Nitrate+Nitrite as N	<0.18	mg/l	0.119	1.10	CALCULATED	08/17/21 18:46		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2	08/23/21	U	TML
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	08/18/21		TML
Solids, Total Dissolved	48	mg/l	4	5	SM 2540 C	08/18/21		TMH
Total Organic Carbon	5.3	mg/l	0.3	0.5	SM 5310 C	08/19/21		ALD
Solids, Total Suspended	3	mg/l	1	1	SM 2540 D	08/18/21		ALD

Lab ID: 2125188-05 **Collected By:** Client **Sampled:** 08/17/21 09:11 **Received:** 08/17/21 14:30
Sample Desc: PR-3S **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l		0.01	SM 4500-P F	08/19/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	23	mg CaCO3/L		2	SM 2320 B	08/19/21		APR
Ammonia as N	<0.05	mg/l	0.05	0.10	ASTM D6919-03	08/18/21	U	APR
Biochemical Oxygen Demand	5.8	mg/l	2.0	2.0	SM 5210 B	08/18/21 11:20		ASD
Nitrate as N	<0.10	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	08/17/21 19:03	U	JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/17/21 19:03	U	JAF
Nitrate+Nitrite as N	<0.11	mg/l	0.119	1.10	CALCULATED	08/17/21 19:03		JAF
Nitrogen, Total Kjeldahl (TKN)	0.49	mg/l	0.43	0.50	EPA 351.2	08/23/21	J	TML
Phosphorus as P, Total	0.01	mg/l	0.01	0.01	SM 4500-P F	08/18/21		TML
Solids, Total Dissolved	72	mg/l	4	5	SM 2540 C	08/18/21		TMH
Total Organic Carbon	5.9	mg/l	0.3	0.5	SM 5310 C	08/19/21		ALD
Solids, Total Suspended	11	mg/l	1	1	SM 2540 D	08/18/21		ALD

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	111	mpn/100ml	1	SM 9223 B/Quantitray	8/17/21 15:19	8/18/21 10:18		DRW
Total Coliform	>2420	mpn/100ml	1	SM 9223 B/Quantitray	8/17/21 15:19	8/18/21 10:18		DRW

Lab ID: 2125188-06 **Collected By:** Client **Sampled:** 08/17/21 09:11 **Received:** 08/17/21 14:30
Sample Desc: PR-3M **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l		0.01	SM 4500-P F	08/19/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	24	mg CaCO3/L		2	SM 2320 B	08/19/21		APR
Ammonia as N	0.10	mg/l	0.05	0.10	ASTM D6919-03	08/18/21	J	APR
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	08/18/21 11:20		ASD
Nitrate as N	0.16	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	08/17/21 19:20	J	JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/17/21 19:20	U	JAF
Nitrate+Nitrite as N	<0.17	mg/l	0.119	1.10	CALCULATED	08/17/21 19:20		JAF
Nitrogen, Total Kjeldahl (TKN)	<0.43	mg/l	0.43	0.50	EPA 351.2	08/23/21	U	TML
Phosphorus as P, Total	0.01	mg/l	0.01	0.01	SM 4500-P F	08/18/21		TML
Solids, Total Dissolved	79	mg/l	4	5	SM 2540 C	08/18/21		TMH
Total Organic Carbon	5.4	mg/l	0.3	0.5	SM 5310 C	08/19/21		ALD
Solids, Total Suspended	2	mg/l	1	1	SM 2540 D	08/18/21		ALD

Lab ID: 2125188-07 **Collected By:** Client **Sampled:** 08/17/21 09:11 **Received:** 08/17/21 14:30
Sample Desc: PR-3D **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.01	mg/l		0.01	SM 4500-P F	08/19/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	25	mg CaCO3/L		2	SM 2320 B	08/19/21		APR
Ammonia as N	0.07	mg/l	0.05	0.10	ASTM D6919-03	08/18/21	J	APR
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	08/18/21 11:20		ASD
Nitrate as N	<0.10	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	08/17/21 20:27	U	JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/17/21 20:27	U	JAF
Nitrate+Nitrite as N	<0.11	mg/l	0.119	1.10	CALCULATED	08/17/21 20:27		JAF
Nitrogen, Total Kjeldahl (TKN)	2.35	mg/l	0.43	0.50	EPA 351.2	08/23/21		TML
Phosphorus as P, Total	0.02	mg/l	0.01	0.01	SM 4500-P F	08/18/21		TML
Solids, Total Dissolved	35	mg/l	4	5	SM 2540 C	08/18/21		TMH
Total Organic Carbon	4.6	mg/l	0.3	0.5	SM 5310 C	08/19/21		ALD
Solids, Total Suspended	<1	mg/l	1	1	SM 2540 D	08/18/21		ALD

Lab ID: 2125188-08 **Collected By:** Client **Sampled:** 08/17/21 08:15 **Received:** 08/17/21 14:30
Sample Desc: PR-4S **Sample Type:** Grab

	Result	Unit	MDL	Rep. Limit	Analysis Method	Analyzed	Notes	Analyst
Dissolved General Chemistry								
Phosphorus as P, Dissolved	0.02	mg/l		0.01	SM 4500-P F	08/19/21	G-11, G-17	TML
General Chemistry								
Alkalinity, Total to pH 4.5	26	mg CaCO3/L		2	SM 2320 B	08/19/21		APR
Ammonia as N	0.06	mg/l	0.05	0.10	ASTM D6919-03	08/18/21	J	APR
Biochemical Oxygen Demand	<2.0	mg/l	2.0	2.0	SM 5210 B	08/18/21 11:20		ASD
Nitrate as N	0.30	mg/l	0.10	1.00	EPA 300.0 Rev 2.1	08/17/21 20:44	J	JAF
Nitrite as N	<0.01	mg/l	0.01	0.10	EPA 300.0 Rev 2.1	08/17/21 20:44	U	JAF
Nitrate+Nitrite as N	<0.31	mg/l	0.119	1.10	CALCULATED	08/17/21 20:44		JAF
Nitrogen, Total Kjeldahl (TKN)	0.59	mg/l	0.43	0.50	EPA 351.2	08/23/21		TML
Phosphorus as P, Total	0.03	mg/l	0.01	0.01	SM 4500-P F	08/18/21		TML
Solids, Total Dissolved	37	mg/l	4	5	SM 2540 C	08/18/21		TMH
Total Organic Carbon	4.8	mg/l	0.3	0.5	SM 5310 C	08/19/21		ALD
Solids, Total Suspended	<1	mg/l	1	1	SM 2540 D	08/18/21		ALD

	Result	Unit	Rep. Limit	Analysis Method	Incubated	Analyzed	Notes	Analyst
Microbiology								
Escherichia coli	1	mpn/100ml	1	SM 9223 B/Quantitray	8/17/21 15:19	8/18/21 10:18		DRW
Total Coliform	2420	mpn/100ml	1	SM 9223 B/Quantitray	8/17/21 15:19	8/18/21 10:18		DRW

Preparation Methods

Specific Method	Preparation Method	Prep Batch	Prepared Date	Prepared By
2125188-01				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1H1042	08/18/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1H1038	08/18/2021	TML
2125188-02				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1H1042	08/18/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1H1038	08/18/2021	TML
2125188-03				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1H1042	08/18/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1H1038	08/18/2021	TML
2125188-04				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1H1042	08/18/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1H1038	08/18/2021	TML
2125188-05				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1H1042	08/18/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1H1038	08/18/2021	TML
2125188-06				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1H1042	08/18/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1H1038	08/18/2021	TML
2125188-07				
Dissolved General Chemistry				
SM 4500-P F	SM 4500-P B	B1H1042	08/18/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1H1038	08/18/2021	TML
2125188-08				
Dissolved General Chemistry				

SM 4500-P F	SM 4500-P B	B1H1042	08/18/2021	TML
General Chemistry				
SM 4500-P F	SM 4500-P B	B1H1038	08/18/2021	TML

Notes and Definitions

G-11	The sample was filtered after it was received at the laboratory.
G-17	The sample was preserved in the laboratory.
J	Estimated value
Q-10	The matrix spike(s) were outside acceptable limits of 90-110% recovery at 110.4%.
U	Analyte was not detected above the indicated value.

M.J. Reider Associates, Inc.
107 Angelica St, Reading PA, 19611
610-374-5129 www.mjreider.com

WORK ORDER
Chain of Custody

2125188

Client Code: 3157 **Client:** Tetra Tech
Project Manager: Richard A Wheeler **Project:** 2021 - Prompton Reservoir
Report To: Tetra Tech - David Wertz - USACE, Phila Dist. Env.Resources Branch 100 Penn Square E., Arlington, VA 22201
Invoice To: Tetra Tech - David Wertz - USACE, Phila Dist. Env.Resources Branch 100 Penn Square E., Arlington, VA 22201

Collected By : (Full Name) Gregory Wacik **Comments:**

2125188-01 PR-1S

Matrix: Non-Potable Water Date: 8/17/21
Type: Grab Time: 0840

BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B
Alk SM 2320B, NH3-N D6919-03, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

2125188-02 PR-2S

Matrix: Non-Potable Water Date: 8/17/21
Type: Grab Time: 1005

BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B
Alk SM 2320B, NH3-N D6919-03, PO4 SM 4500P-F, TDS SM 2540C, TOC SM 5310C, TSS SM 2540D, TKN EPA 351.2

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

	Date/Time		Date/Time
Relinquished By	8/17/21 1:00	Received By	8/17-21 1300
Relinquished By		Received By	
Relinquished By		Received at Laboratory By	8/17-21 1430

Sample Kit Prepared By:	Date/Time
VBJ	7/19/21

Sample Temp (°C): 7
Samples on Ice? Yes No N/A
Approved By: VBJ
Entered By:

The Client, by signing (or having the client's agent sign), agrees to MJRA's Terms and Conditions and to pay for the above requested services including any additional associated fees incurred.

Printed: 7/15/2021 9:32:43AM

Report Template: wko WorkOrder COC ls

M.J. Reider Associates, Inc.

Client Code: 3157 **Client:** Tetra Tech

Project Manager: Richard A Wheeler **Project:** 2021 - Prompton Reservoir

Comments:

Collected By : (Full Name) Gregory Wacik

2125188-03 PR-2M

Matrix: Non-Potable Water Date: 8/17/21
Type: Grab Time: 1005

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F
Alk SM 2320B, NH3-N D6919-03, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2125188-04 PR-2D

Matrix: Non-Potable Water Date: 8/17/21
Type: Grab Time: 1005

BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F
Alk SM 2320B, NH3-N D6919-03, PO4 SM 4500P-F, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2125188-05 PR-3S

Matrix: Non-Potable Water Date: 8/17/21
Type: Grab Time: 0911

BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N EPA 300.0, PO4-D SM 4500P-F, TC (#) SM 9223B, NO3-N EPA 300.0, NO2-N, NO3-N, Combined NO3+NO2
Alk SM 2320B, NH3-N D6919-03, TDS SM 2540C, PO4 SM 4500P-F, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By	Date/Time 8/17/21 1100	Received By	Date/Time 8-17-21 1300
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received at Laboratory By	Date/Time 8-17-21 1430

Sample Kit Prepared By:	Date/Time
MBW	7/19/21
Sample Temp (°C):	7
Samples on Ice?	Yes No NA
Approved By:	SBS
Entered By:	

Printed: 7/15/2021 9:32:43AM

Report Template: wko WorkOrder COC ls

M.J. Reider Associates, Inc.

2125188

Client Code: 3157 **Client:** Tetra Tech

Project Manager: Richard A Wheeler **Project:** 2021 - Prompton Reservoir

Comments:

Collected By : (Full Name) Gregory Wacik

2125188-06 PR-3M

NO2-N EPA 300.0, NO3-N EPA 300.0, BOD SM 5210B, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F
NH3-N D6919-03, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D, Alk SM 2320B, PO4 SM 4500P-F, TDS SM 2540C

Matrix: Non-Potable Water Date: 8/17/21
Type: Grab Time: 0911

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2125188-07 PR-3D

NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, BOD SM 5210B, NO2-N EPA 300.0, NO3-N EPA 300.0
TSS SM 2540D, TOC SM 5310C, Alk SM 2320B, PO4 SM 4500P-F, TDS SM 2540C, NH3-N D6919-03, TKN EPA 351.2

Matrix: Non-Potable Water Date: 8/17/21
Type: Grab Time: 0911

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Pl 500ml H2SO4
D - Pl 250ml NP
E - Pl 500ml Lab Filtered
F - Vial Amber 40ml H3PO4, minimal hdspc
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc

2125188-08 PR-4S

NO2-N EPA 300.0, NO3-N EPA 300.0, BOD SM 5210B, EC (#) SM 9223B Confirmation, NO2-N, NO3-N, Combined NO3+NO2, PO4-D SM 4500P-F, TC (#) SM 9223B
NH3-N D6919-03, TDS SM 2540C, TKN EPA 351.2, TOC SM 5310C, TSS SM 2540D, Alk SM 2320B, PO4 SM 4500P-F

Matrix: Non-Potable Water Date: 8/17/21
Type: Grab Time: 0815

A - Pl 500ml NP, minimal hdspc
B - Pl Liter NP
C - Sterile Pl 125ml NaThio
D - Pl 500ml H2SO4
E - Pl 250ml NP
F - Pl 500ml Lab Filtered
G - Vial Amber 40ml H3PO4, minimal hdspc
H - Vial Amber 40ml H3PO4, minimal hdspc
I - Vial Amber 40ml H3PO4, minimal hdspc

Relinquished By	8/17/21 1:00 Date/Time	Received By	8-17-21 1300 Date/Time
Relinquished By	Date/Time	Received By	Date/Time
Relinquished By	Date/Time	Received at Laboratory By	8-17-21 1430 Date/Time

Sample Kit Prepared By: VB	Date/Time 7/19/21
Sample Temp (°C): 2	
Samples on Ice? Yes No NA	
Approved By:	
Entered By:	

MJRA Terms & Conditions

All samples submitted must be accompanied by signed documentation representing a Chain of Custody (COC). The COC Record acts as a contract between the client and MJRA. Signing the COC form gives approval for MJRA to perform the requested analyses and is an agreement to pay for the cost of such analyses**.** COC Records must be completed in black or blue indelible ink (must not run when wet). COC documentation begins at the time of sample collection. Client is required to document all sample details prior to releasing samples to MJRA. All samples must be placed on ice immediately after sampling and shipped or delivered to the laboratory in a manner that will maintain the sample temperature above freezing and below 6C (loose ice is preferred)**.**

Sample Submission, Sample Acceptance & Sampling Containers

Included on the COC must be the sample description, date and time of collection (including start and stop for composites), container size and type, preservative information, sample matrix, indication of whether the sample is a grab or composite, number of containers & a list of the tests to be performed. Poor sample collection technique, inappropriate sampling containers and/or improper sample preservation may lead to sample rejection. Suitable sample containers, labels, and preservatives (as applicable), along with blank COCs are provided at no additional cost.

Turnaround Times (TAT)

Average TAT for test results range from 5 to 15 working days depending on the specific analyses and time of year submitted. Faster turnaround times (*RUSH TAT) may be available depending on the current workload in a particular department and the nature of the analyses requested. We encourage you to verify requests for expedited sample results with one of our Technical Directors prior to sample submittal. Without confirmation from a Technical Director, your results may not be completed by your deadline. *RUSH TAT Surcharges are applied for expedited turnaround times.

Analytical Results, Sample Collection Integrity & Subcontracting

Analytical values are for the sample as submitted and relate only to the item tested. The value indicates a snapshot of the constituent content of the sample at the time of sample collection. Analytical results can be impacted by poor sample collection technique and/or improper preservation. All sample collection completed by MJRA was performed in accordance with applicable regulatory protocols or as specified in customer specific sampling plans. Constituent content will vary over time based on the matrix of the sample and the physical and chemical changes to its environment. All sample results and laboratory reports are strictly confidential. Results will not be available to anyone except the primary client or authorized party representing the client unless MJRA receives additional permissions from the client. When necessary, MJRA will subcontract certain analyses to a third party accredited laboratory. If client prohibits subcontracting, it must be provided in writing and include instruction on how to proceed with client samples that require third party analyses.

Payment Terms

Payment Terms are Net 30 days. Prices are subject to change without notice. A standing monthly charge of 1.5% of the clients over-30-day-unpaid balance may be added to the balance after 30 days and each month thereafter (day 31, 61, 91 etc.). The laboratory accepts all major credit cards, ACH transactions, checks and cash. New clients must pay for all services rendered prior to sample collection and/or in some cases report processing. Clients must contact the MJRA accounting department to pursue a credit-based account. MJRA reserves the right to terminate the client's credit account and to refuse to perform additional services on a credit basis if any balance is outstanding for more than 60 days.

Warranty & Litigation

MJRA does not guarantee any results of its services but has agreed to use its best efforts, in accordance with the standards and practices of the industry, to cause such results to be accurate and complete. We disclaim any other warranties, expressed or implied, including a warranty of fitness for a particular purpose and warranty of merchantability. Clients agree that they shall reimburse MJRA for any and all fees, cost and litigation expenses, including reasonable attorney fees incurred by MJRA in obtaining payment for the services rendered. All costs associated with compliance with any subpoena for documents, testimony, or any other purpose relating to work performed by MJRA, for a client, shall be paid by that client. MJRA's aggregate liability for negligent acts and omissions and of an intentional breach by MJRA will not exceed the fee paid for the services. Client agrees to indemnify and hold MJRA harmless for any and all liabilities in excess of said amount. Neither MJRA nor the client shall be liable to the other for special, incidental consequential or punitive liability or damages included but not limited to those arising from delay, loss of use, loss of profits or revenues. MJRA will not be liable to the client unless the client has notified MJRA of the discovery of the alleged negligent act, error, omissions or breach within 30 days of the day of its discovery and within one year of the date of invoice.

Reviewed and Approved by:

Richard A Wheeler
Director of Field Services

NELAP accredited by PA. (PADEP #06-00003) Visit our website to view our current
NELAC accreditations for various drinking water, wastewater and solid & chemical materials analytes.
Additional accreditations by MD (261), NY(12094)